

MAY 2007

Draft Environmental Assessment

**NORTH BOCA RATON
SECOND RENOURISHMENT PROJECT
BOCA RATON, PALM BEACH COUNTY, FLORIDA**



**U.S. Army Corps
of Engineers**
JACKSONVILLE, DISTRICT

**DRAFT FINDING OF NO SIGNIFICANT IMPACT
NORTH BOCA RATON SECOND RENOURISHMENT
PALM BEACH COUNTY, FLORIDA**

I have reviewed the Environmental Assessment (EA) for the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the Environmental Assessment enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are provided in summary as following

a. The proposed renourishment would occur within the footprint of prior beach nourishment action. The work may affect nesting sea turtles and appropriate protective measures will be undertaken to avoid harm or harassment.

b. Pending completion of coordination with the U.S. Fish and Wildlife Service and National Marine Fisheries Service (undertaken through the Regulatory process), the project would comply with Section 7 of the Endangered Species Act. Our determination is that the work will not jeopardize the continued existence of any threatened or endangered species or adversely impact any designated "critical habitat."

c. State water quality standards would be met. Certification of water quality from the state of Florida would be obtained pursuant to Section 401 of the Clean Water Act and would included mitigation for impacts to submerged resources, if required.

d. Pending the State's concurrence with the Coastal Zone Consistency Determination (Appendix II of the EA, and the Regulatory permitting process), the action is consistent with the State's CZM programs.

e. The borrow site would be limited to areas appropriately investigated for cultural resources. Possible eligible cultural resources would not be dredged and the appropriate buffer zone would be established around cultural resources.

f. Measures to minimize or avoid potential impacts to fish and wildlife resources would be implemented throughout project construction.

Paul L. Grosskruger
Colonel, U.S. Army

Date

ENVIRONMENTAL ASSESSMENT ON NORTH BOCA RATON SECOND BEACH RENOURISHMENT BOCA RATON, PALM BEACH COUNTY, FLORIDA

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**ENVIRONMENTAL ASSESSMENT
ON
NORTH BOCA RATON SECOND RENOURISHMENT
BOCA RATON, PALM BEACH COUNTY, FLORIDA**

1 PROJECT PURPOSE AND NEED

1.1 PROJECT AUTHORITY.

1.2 INITIAL AUTHORIZATION.

The Federal shore protection project for Palm Beach County, Florida, from the Martin County Line to the Lake Worth Inlet and from the South Lake Worth Inlet to the Broward County Line was authorized by Section 101 of the River and harbor Act of October 23, 1962 (Public Law 87-874). This authorization included the nourishment of 2.7 miles of (Boca Raton) shoreline for a period of 10 years.

1.2.1 SUPPLEMENTAL AUTHORIZATION.

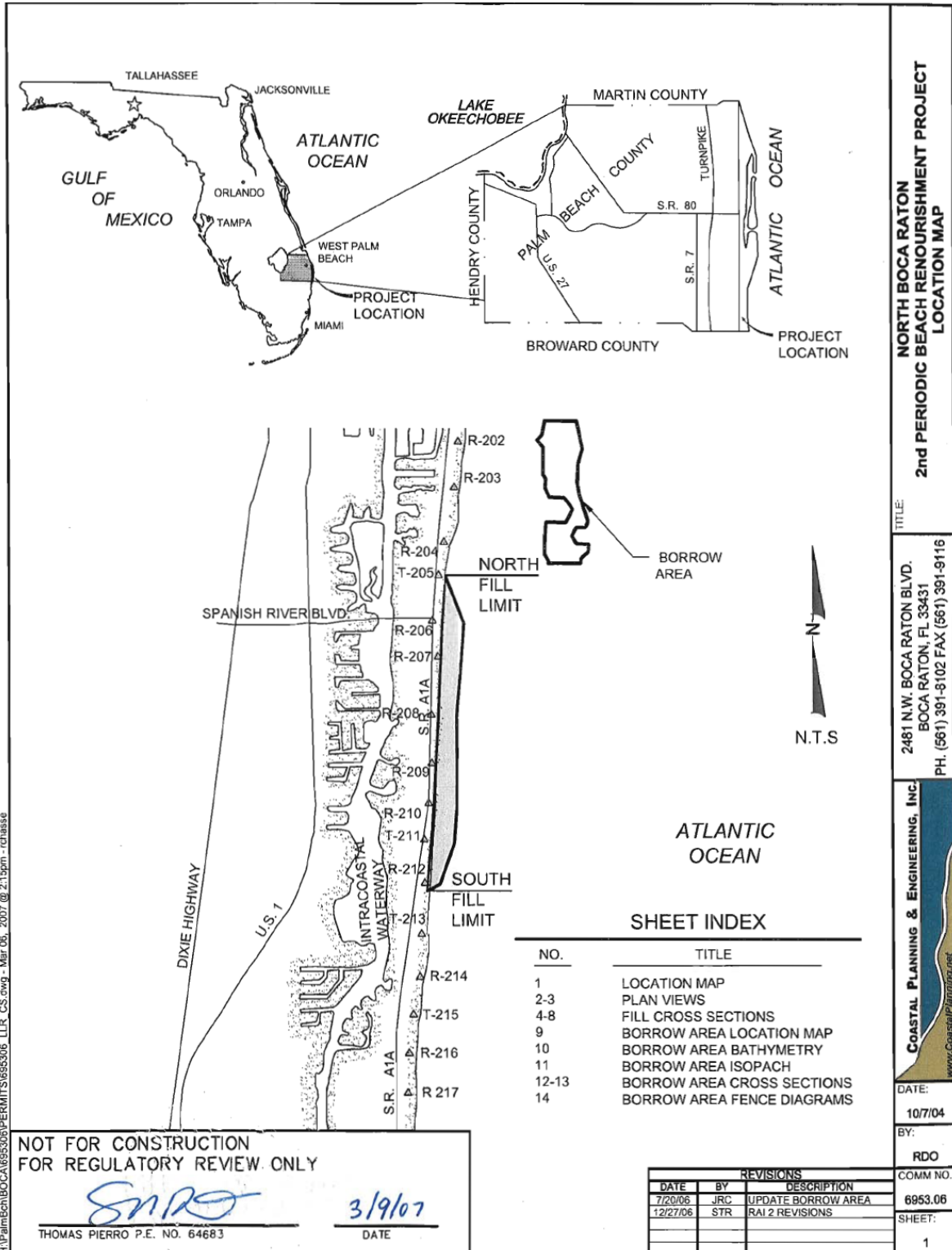
Section 506 (b) (2) of the Water Resources Development Act of 1996 (PL-99-662) reauthorized the Boca Raton, Palm Beach County Shore Protection Project and extended Federal participation to 50 years, beginning from the date of the initial construction in 1988.

1.3 PROJECT LOCATION.

1.3.1 BEACH RENOURISHMENT SITE.

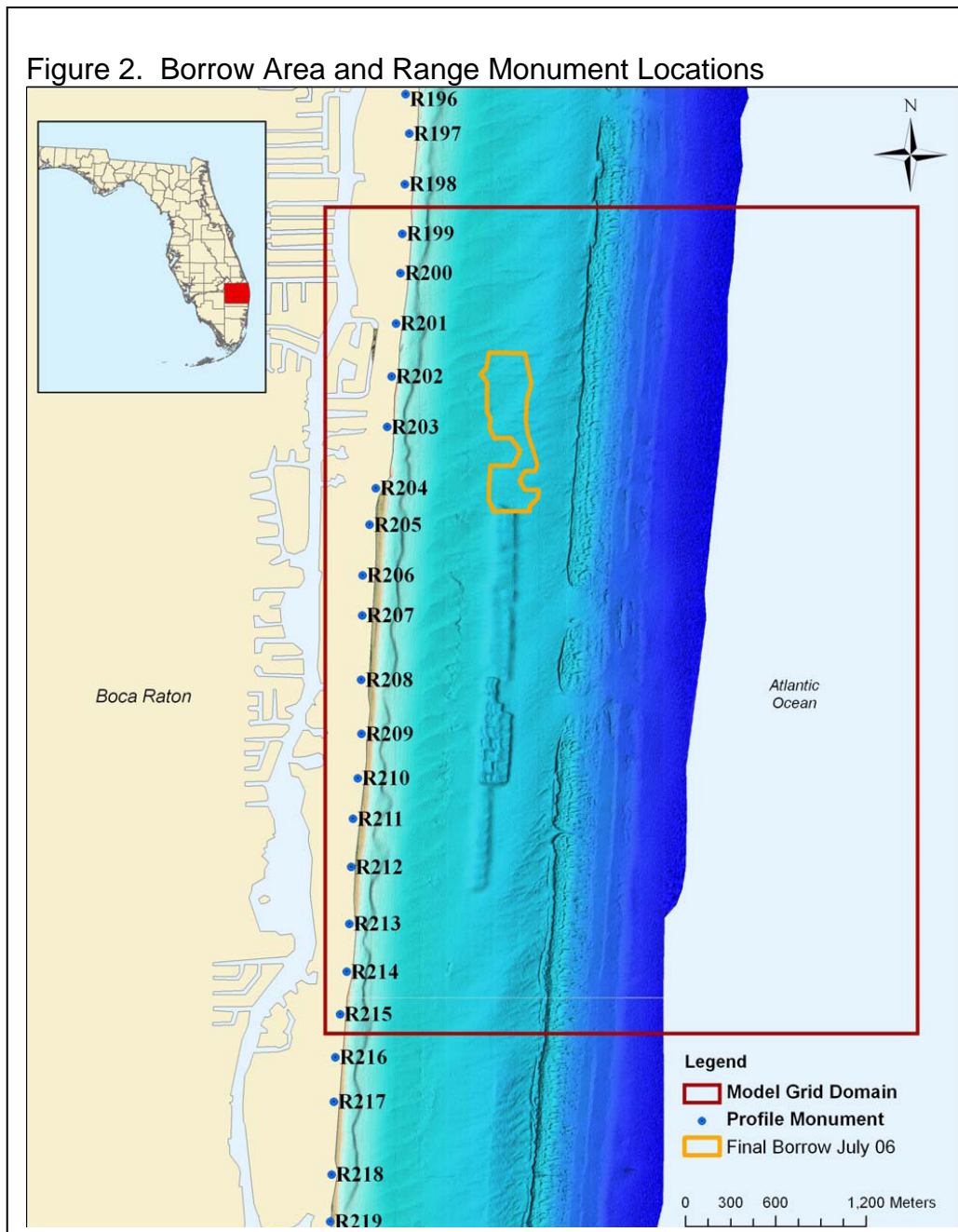
The North Boca Raton project area is located along 1.45 miles of coastal shoreline in southern Palm Beach County on the east coast of Florida, 40 miles north of Miami and 25 miles south of West Palm Beach. It is situated on an Atlantic barrier island and is separated from the mainland by the Atlantic Intracoastal Waterway. The project area is entirely within the limits of the City of Boca Raton and is not part of the coastal barrier resources system (**Figure 1**).

FIGURE 1: VICINITY MAP AND PLAN VIEW



1.3.2 BORROW SITE LOCATION.

The proposed borrow area is located approximately 0.5 miles offshore of the project area, between Florida State Plane Coordinates N 750000 and about 600 feet north of N751500. The borrow area is north of the beach renourishment fill area and situated offshore between Florida Department of Environmental Protection (FDEP) land reference monuments R-202 and T-205 (**Figure 2**).



1.4 PROJECT NEED OR OPPORTUNITY.

The natural forces that shape the project area coastline include wind, waves, and tides. During storm conditions, these forces are amplified, posing a threat to the structures and properties that border the project area. Coastal currents and sea level rise further compound the erosion problem. Available data suggests that natural forces have contributed to an active erosion problem within the project area dating back to at least 1929.

The project is second periodic renourishment of the Boca Raton segment of the Federal shore protection project for Palm Beach County. The project is needed to serve the public's interest by providing beach nourishment to protect and reduce damages to shorefront development and coastal resources from shore erosion, storm tidal flooding and wave effects, in addition to, beach recession from past erosional events and longshore sediment transport.

1.5 PROJECT HISTORY.

The combined effect of wind, waves, tides, currents and sea level rise have resulted in a net southerly transport of sand out of the project area. Historic shoreline changes recorded within the project area indicated that the project beach shoreline receded 99.3 feet in width or 2.0 feet/year over a 50-year period between 1929 and 1979. Prior to the first nourishment project in 1988, the Corps assessed that within the 50-year period the project area had lost approximately 833,000 cubic yards of material or 16,660 cubic/year.

Preconstruction surveys conducted in 1974, 1985 and 1988 indicated that the project area shoreline receded a total of 17 feet of width over the 14-year timeframe or about 1.2 feet/year. From 1974 to 1988, approximately 151,000 cubic yards of sand eroded from the project area. This averaged to a volumetric erosion rate of 10,800 cubic yard/year for the 14-year period (FDEP, Joint Coastal Application, 2005).

Pre-construction surveys for the initial beach nourishment project indicated that in order to build a 50-foot width design berm approximately 980,000 cubic yards of material would be required, due to continuing erosion of the beach and dunes. The initial beach nourishment project was constructed between July and August . Post-construction surveys estimated that 1,102,000 cubic yards of sand were placed by the contractor along the 1.45 mile long project area. Note: This volume represents an "as-built" and not a "pay volume of sand." The project's design width was 50 feet with the placement of 95 feet of advanced nourishment fill based on the expected equilibrium profile. The design berm elevation for the initial project was +9 feet NVGD (FDEP, Joint Coastal Application, 2005).

The second nourishment or first renourishment of the North Boca shoreline occurred in 1998 with the placing of 692,300 cubic yards of material over the 1.45 mile project length. Pre-construction surveys conducted in June 1988 and in January 1998 found an average shoreline change within the project area of 50.4 feet. The shoreline locations at profile line R-209 to R-212, at the southern end of the project, were landward of the design beach width (June 1988 MHW + 50 feet) at the beginning of the first

renourishment project in 1998. Shoreline locations at the four remaining project area profile lines (T-205 to R-208) were an average of 79 feet seaward of the design beach.

A comparison of the June 1988 and January 1998 profiles indicated there was an increase of 721,100 cubic yards of material within the project area. However, the first nourishment placed 1,102,000 cubic yards of sand within the project limits. Given this advanced placement, it is estimated that 349,000 cubic yards or 36,400 cubic/year eroded from the project area within the 9.6-year interval of the first nourishment and first renourishment projects.

The 1998 renourishment extended the shoreline an average of 137 feet. Based on surveys conducted in May 1998 and September 2004, it was noted the project area shoreline had receded an average of 124 feet following the 1998 construction. This recession also included recession due to equilibrium of the beach profile. The September 2004 shoreline was determined to be 13 feet seaward of the design shoreline. It should be noted the design section was breached at R-210, T-211 and R-212, as the shoreline receded beyond the design shoreline in September 2004.

Based on the September 2004 survey, approximately 497,400 cubic yards of material has eroded from within the project area (between T205-R-212). The average erosion rate is calculated at 78,400 cubic yards/year. Note: This value might be slightly higher if the erosion rate within footprint of fill is measured (FDEP, Joint Coastal Application, 2005).

The City of Boca Raton north beach project area has been monitored as part of the North Boca Raton monitoring program since the 1988 project and continues to be monitored annually as part of the FDEP City of Boca Raton physical monitoring program. Florida Department of Environmental Protection (FDEP) has established and maintains a set of coastal reference monuments for beach monitoring surveys and documentation purposes. Reference monuments have been established approximately every 1,000 feet along the coastal shoreline of all beach front areas (CFESF, 1995) and are tied to the State Plane Coordinate System, and are further used as reference points throughout this environmental assessment. **Table 1** lists the reference monuments assigned to the Palm Beach County shoreline.

Table 1. Palm Beach County Reference Monuments Locations

	LOCATION	DEP MONUMENT RANGE	
	Jupiter/Juno	R-13 to R-29	
	Lake Worth Inlet	R-75 to R-78	
	North Palm Beach Island	R-76 to R-85	
	Palm Beach Island	R-91 to R-105	
	South Palm Beach Island	R-116 to R-132	
	Ocean Ridge	R-152 to R-159	
	Delray Beach	R-175 to R-188	
	Highland Beach	R-188 to R-205	
	Boca Raton	R-205 to R-213	

Source: USACE, Beach Erosion Control Study at Boca Raton (1996)

1.6 AGENCY GOAL OR OBJECTIVE.

1.6.1 GENERAL DESCRIPTION.

The proposed project involves the renourishment of 1.45 miles of beach in City of Boca Raton using material dredged from an offshore borrow area identified as Borrow Area B. The fill material would be dredged from the borrow area using a hydraulic cutterhead dredge and would be pumped from the borrow area to the beach using a series of submerged and floating pipelines. The renourishment project area would encompass 1.45 or a total of 66.07 acres of beach and submerged lands, which includes approximately 13.34 acres landward of mean high water (MHW) and 53.63 acres from MHW to the construction toe of fill.

The Federal and City objectives include: (1) the reduction of expected storm damages through beach nourishment; (2) environmental protection and restoration; (3) maintaining suitable habitat for nesting sea turtles, invertebrate, shorebird, and wading birds; (4) maintaining human safety and social well-being; and (5) protecting cultural and historical resources through avoidance, minimization, or use of construction barriers. Other Federal planning concerns include reestablishing the existing beaches as suitable recreational areas and maintaining the economics associated the beach recreation in this area.

1.6.2 BEACH DESIGN.

The project would place approximately 918,200 cubic yards of sand along a 1.45 mile segment of the Boca Raton coastline from FDEP reference monuments T-205 to 181 feet south of monument R-212. The project construction cross-section provides for an average berm width extension of 184 feet at an elevation of +9 feet (NGVD) with a seaward slope of one (1) foot vertical to fifteen (15) feet horizontal to reduce potential escarpment of the nourished beach. **Figures 3a and 3b** show the limits of the project fill placement areas.

1.6.3 BORROW AREA.

The borrow area proposed for the project is referred to as Borrow Area B and is located approximately 0.5 mile offshore of the northern project limit. The borrow area runs parallel to shore and is located from 2,000 to 2,500 feet or 0.5 mile offshore and further located between the FDEP land reference monument R-202 and T-205. The proposed borrow areas are located approximately 0.5 miles offshore of the project area, between FDEP monuments R-201 and R-211. Borrow Area B is approximately 5,200 feet long (north to south) and 930 feet wide (east to west). Depths within the borrow area range from -32 to -64 feet NAVD. The volume of beach compatible sand in the borrow area is estimated to be 2,080,000 cubic yards. The average silt and clay component of the identified borrow area is 1.36% (**Tables 2 and 3**).

Characteristics of Borrow Material Based on
Table 2. Industry Standard Geotechnical Investigation

Sediment Parameter	Borrow Area
Allowable Wet Munsell Value (1)	4 or lighter
Shell Hash Content (2)	0 - 20% visual estimate
Maximum silt (3)	5%
Mean Grain Size Range (4)	0.15 mm to 0.36 mm
Note: (1) Munsel value is referenced to the 2000 standard. (2) Shell hash content isn't representative of the total Carbonate content. (3) Silt is defined as any material passing the #230 sieve. (4) Mean grain size is determined using the sieves shown in Table 3 .	

Mesh/Sieve Sizes Used for
Table 3. Granularmetric Analysis

Sieve No.	SIZE (phi)	SIZE (mm)
3/4	-4.24	19.00
5/8	-4.0	16.00
7/16	-3.5	11.20
5/16	-3.0	8.00
3 1/2	-2.5	5.60
4	-2.25	4.75
5	-2.0	4.00
7	-1.5	2.80
10	-1.0	2.00
14	-0.5	1.40
18	00	1.00
25	0.5	0.71
35	1.0	0.50
45	1.5	0.36
60	2.0	0.25
80	2.5	0.18
120	3.0	0.13
170	3.5	0.09
200	3.75	0.08
230	4.0	0.06

Source FDEP North Boca Raton Joint Coastal Permit (2006)

1.6.4 PLACEMENT OF DREDGED PIPES.

A series of floating and submerged pipes extending from 2,000 feet to 4,500 feet are proposed to transport the dredged sand to the beach placement area. . The pipeline corridors were identified to avoid adverse aquatic and upland impacts. The previously used past pipeline corridor may required modification, given the location of the borrow area and the proposed use of material from the northernmost portion of the borrow area.

A minimum 50-foot buffer is proposed around the mapped hardbottom in the vicinity, and no pipelines would be placed in the area. The dredge material would pass through the floating line at the borrow site into a submerged line on the seafloor that would be transport the material within the established corridors up to the beach placement site. At the landing point of the submerged line on the beach, the material would continue to be pumped through a series of shore-pipes to the discharge point on the beach. Depending of the location of the discharge, the shore-pip would extend up to an additional 7,500 feet along the beach. All efforts would be made to avoid or minimize impacts to the extent practicable (see Figure 2 for location of pipeline corridors).

Figure 3a. North Boca Raton Beach Placement Area

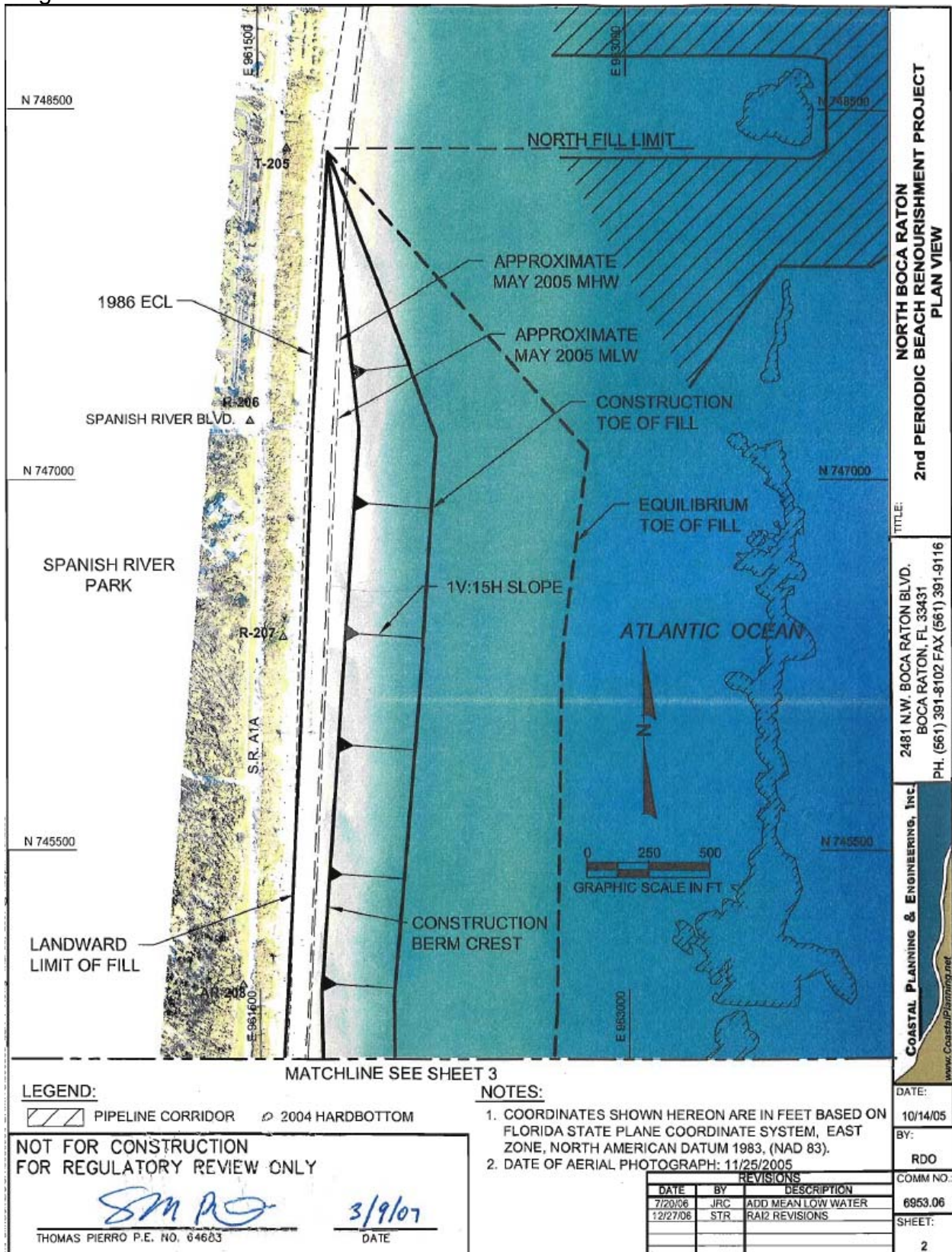
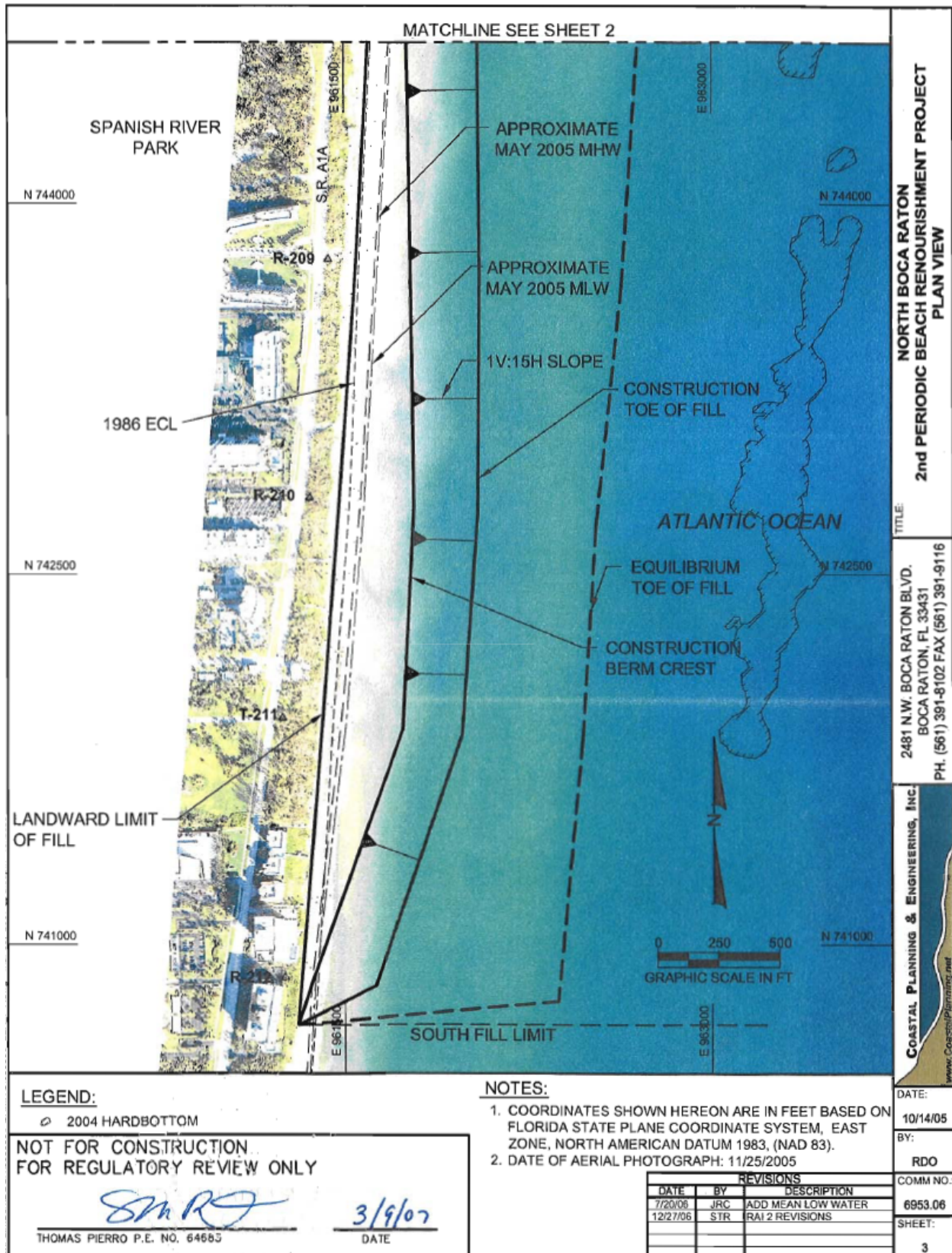


Table 3b. North Boca Raton beach Placement Area



1.7 RELATED ENVIRONMENTAL DOCUMENTS.

a. U.S. Army Corps of Engineers, Jacksonville District (1987). General and Detail Design Memorandum for Beach Erosion Control at Boca Raton, Florida.

b. U.S. Army Corps of Engineers, Jacksonville District (1996) Environmental Impact Statement, Coast of Florida Erosion and Storm Effects Study Region III, Palm Beach, Broward and Dade Counties, Florida.

c. U.S. Army Corps of Engineers, Jacksonville District (1996). Environmental Assessment, Boca Raton Segment First Periodic Renourishment

d. U.S. Army Corps of Engineers, Jacksonville District (2004). Environmental Assessment, Sand Transfer Plant Rehabilitation and Extended Outfall, Palm Beach Harbor-Lake Worth Inlet, Palm Beach County, Florida.

e. Coastal Engineering and Planning (2005). City of Boca Raton Central Beach Renourishment Project and South Boca Raton Beach Renourishment Project.

f. Florida Department of Environmental Joint Coastal Application 0261499-JC Number, submitted by the City of Boca Raton for the Permit Authorization of the Second Renourishment Project of the North Boca Raton Shoreline.

1.8 DECISIONS TO BE MADE.

Alternative shoreline protection and nourishment features for the existing Boca Raton shoreline and the shorelines of Palm Beach County have been evaluated under the following documents:

- General and Detailed Design Memorandum for Beach Erosion Control at Boca Raton, Florida (1987).
- U.S. Army Corps of Engineers, Jacksonville District (1996) Environmental Impact Statement, Coast of Florida Erosion and Storm Effects Study Region III, Palm Beach, Broward and Dade Counties, Florida.
- U.S. Army Corps of Engineers, Jacksonville District (1996). Environmental Assessment, Boca Raton Segment First Periodic Renourishment

This environmental assessment evaluates the direct impacts associated with the planned renourishment through two alternatives, no action and existing placement template. The alternatives as presented have been fully coordinated with the appropriate Federal, State and local resource agencies, environmental groups and other interested stakeholders. Issues of concerns raised by the Federal, State, local agencies and other commenting parties relevant to the proposed renourishment have

been incorporated into this document for detailed evaluation, as appropriate. Under these evaluations, impacts have been considered as related to nearshore and offshore reefs, hardbottom communities, endangered species, health and safety, water quality, aesthetics and recreation, fish and wildlife resources, essential fish habitat, energy conservation, and socio-economic resources. The proposed action would further involve evaluation of the proposed action for compliance with guidelines pursuant to Section 404 (b) of the Clean Water Act, application (to the State of Florida) for Water Quality Certification pursuant to Section 401 of the Clean Water Act, certification of state lands, easements, rights of way, and determination of Coastal Zone Management Consistency. **Table 4** outlines alternatives as evaluated in the referenced documents.

1.9 SCOPING AND ISSUES.

1.9.1 ISSUES EVALUATED IN DETAIL.

The proposed action has been coordinated through the joint permitting process of the Florida Department of Environmental Protection and USACE Department of the Army (DA) Regulatory process. Note: Coordination through the DA permitting process is required, given the sponsor would undertake the project for later reimbursement of the Federal costs.

Agencies coordination include the U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Florida State Clearinghouse, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, and the Florida State Historic Preservation Officer.

1.9.2 IMPACT MEASUREMENTS.

The following provides the means and rationale for measurement and comparison of impacts of the proposed action and alternatives. Section 4.0 Environmental Effects specifically investigates impact measurement and Comparison.

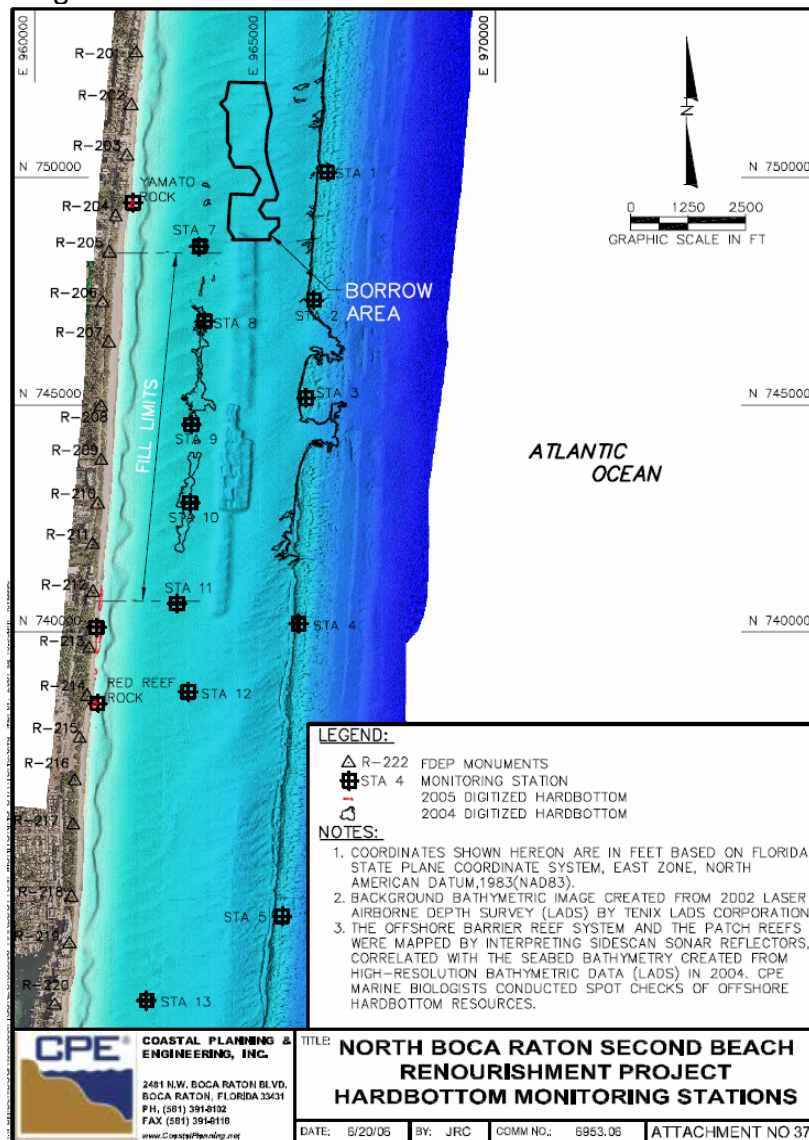
1.9.2.1 Hardbottom Impacts.

Based on digital imaging from a November 2005 aerial photography, 0.10 acre of hardbottom south of the project limits may be indirectly affected by the proposed project. Mitigation constructed in 1988 took into account future impacts to ephemeral hardbottom (within the footprint or design beach template) that may be exposed during future renourishment projects. This mitigation included compensation for all exposed nearshore rock between the Yamato Rock formation (near R-204) and the Red Reef Rock formation (near R-216). All exposed hardbottom shown in the November 2005 aerials is located between these formations and is assumed to have been mitigated for with the artificial reef constructed by the City of Boca Raton in April 1988 (FDEP Joint Coastal Permit Application, 2006). **Figure 4** shows hardbottom locations mapped from bathymetry survey data collected in 2004.

Table 4. Structural and Non-structural Alternatives Previously Evaluated

POSSIBLE MEASURES	LOCAL PLANNING OBJECTIVES (1)				PRINCIPLES AND GUIDELINE ACCOUNTS (2)			
NON-STRUCTURAL	RB	FP	EC	TBE	NED	EQ	OSE	RED
NS-1 No Action	O(3)	O	O	O	O	O	O	O
NS-2 Rezoning of Beach Area	O	P	O	P	P	O	P	P
NS-3 Modification of Building Code	O	P	O	O	P	O	P	O
NS-4 Construction Setback Line	O	P	P	P	P	O	P	P
NS-5 Moratorium on Construction	O	P	O	O	O	O	O	O
NS-6 Flood Insurance	O	O	O	P	O	O	P	O
NS-7 Evacuation Planning	O	O	O	P	PO	O	P	O
NS-8 Establish a No Growth Program	O	O	O	O	O	P	O	O
NS-9 Condemnation of Land And Structures	P	P	P	O	O	F	P	O
NS-10 Various combination of Above	--	--	--	--	--O	--	--	--
STRUCTURAL MEASURES								
S-1 Beach Erosion	O	P	P	O	O	O	P	O
S-2 Beach Fill w/Periodic Nourishment	P	P		P	P	P	P	P
S-3	P	P	P	P	P	P	P	P
S-4 Beach Nourishment w/Maintenance material from adjacent inlets	P	P	P	P	P	P	P	P
S-5 Beach Fill w/periodic Nourishment stabilized by Groins	P	P	P	P	P	P	P	P
S-6 Seawalls	O	P	P	O	P	O	P	O
S-7 Beach Fill w/periodic nourishment & hurricane surge protection-sand dune	P	P	F	P	P	P	P	P
S-8 Beach Fill w/periodic nourishment & hurricane surge protection project stabilized by offshore breakwaters or submerged artificial reefs	P	P	F	P	P	P	P	P
S-9 nearshore berms	P	P	F	P	P	P	P	P
S-10 Beachfill with nearshore berms	P	P	F	P	P	P	P	P
S-11 Stabilization of beaches & dunes by vegetation	O	P	P	P	O	P	P	P
S-12 Feeder beach	P	P	P	P	P	P	P	P
S-13 Relocation of structures	O	P	P	P	O	P	P	P
S-14 Flood proofing of structures	O	P	O	O	O	O	P	O
S-15 Abandon or modify navigation projects	O	O	P	O	O	P	O	O
S-16 Sand tightening of jetties	O	O	P	O	O	P	OP	O
S-17 Upgrading on construction of sand transfer plants for renouishment	P	P	P	P	P	P	P	P
S-18 Various combinations of above	--	--	--	--	--	--	--	--
Source: Coast of Florida Erosion Study, Region III (1996)								
1 RB – Provisions of recreation beach FP - Protection of flooding and wave damage EC - Beach erosion control TBE -Protection of tourist base economy					3 F – Fully meet objective P – Partially meets objective O – Not meeting objective			
2 NED – National Economic Development EQ - Environmental quality OSE - Other Social effects RED -- Regional Economic Development								

Figure 4 Hardbottom and Offshore Reef Locations



1.9.2.2 Sea turtles.

Continued beach erosion would reduce available nesting habitat. Protective and mitigative protocols have been established with the goal of minimization of impacts to sea turtles and compliance with the requirements of the Endangered Species Act.

1.9.3 PERMITS, LICENSES, AND ENTITLEMENTS.

A Department of Army (DA) permit is required for the proposed project, as the renourishment will be a locally constructed project with later reimbursement of the Federal costs. Permit issuance is also required from the Florida Department of Environmental Protection. The joint coastal permit application (File No. 0261499-001-JC) submitted to FDEP and the DA permit (SAJ-1986-479) actions are pending.

2 ALTERNATIVES

Previous environmental documents as listed in Section 1.7 have fully evaluated reasonable environmental alternatives. This EA focuses primarily on the no action and existing beach placement template with an offshore source of material. Then based on the information and analysis presented in the sections on the Affected Environment and the Probable Impacts, this section presents the beneficial and adverse environmental effects of all alternatives in comparative form, providing a clear basis for choice among the options for the decision-maker and the public.

2.1 DESCRIPTION OF ALTERNATIVES.

2.1.1 NO-ACTION ALTERNATIVE (STATUS-QUO).

The no-action alternative assumes that current conditions would continue unabated. This action, however would provide no solution to existing shoreline erosion problems, and would create the assumption the no action was the more viable alternative. The project is located along a highly developed shoreline and a no action alternative would allow continued erosion of the shoreline and the eventual loss of the dry beach with eventual adverse impacts to existing development and infrastructures.

2.1.2 BEACH FILL WITH PERIODIC RENOURISHMENT.

This alternative would allow for beach construction of specific dimensions within the existing template and short of the authorized dimensions for the North Boca Raton shoreline. The offshore borrow source, identified as Borrow Area B, would provide the material necessary for the second renourishment of the shoreline and periodic renourishment to maintain the design beach. Sufficient quantities of sand are available in the designated borrow area for the immediate construction and renourishment projects up to the year 2038 (Florida Coastal Study, 2005). It projected over the 50-year project life, future renourishment intervals would be from 8- to 10- years. The proposed renourishment would place a total volume of 918,200 cubic yards of beach quality sand from an offshore borrow area over a total distance of approximately 1.45 miles of beach fronting the Atlantic Ocean.

2.2 MITIGATION

In 1988, six artificial reef modules were constructed just south of the project area at Red Reef Park to mitigate for direct and secondary impact to nearshore hardbottom habitats between R-204 and R-214. This mitigation included compensation for all exposed nearshore rock between the Yamato Rock formation (near R-204) and the Red Reef

Rock formation (near R-216). Approximately 0.10 acre of indirect or secondary impacts to existing hardbottom south of the project's limits would be included in the previous mitigation. Mitigation is not a component of the proposed project. A summary of direct and indirect impacts are listed in **Table 5**.

Table 5. Summary of Indirect and Direct Impacts of Alternatives

ENVIRONMENTAL FACTOR	Alternative 1: No Action Status Quo	Preferred Plan Alternative 2: Beach Nourishment with Periodic Renourishment from Offshore Borrow Source
SEA TURTLES	Beach erosion would continue Resulting in a significant loss of Nesting beach for sea turtles	Periodic beach nourishment would continue at projected interval of every 8 to 10 years..
WEST INDIAN MANATEE	No potential for manatee collision with dredge barges would result.	Construction unlikely to adversely affect manatees with implementation of standard protection conditions. Future maintenance dredging may be slightly reduced.
SHORELINE STABILITY	Current rates of erosion, shoaling, recession with continue with eventual loss to dry beach, dune area, evacuation route, economic losses, and threats to existing infrastructures.	Shore protection benefits would be place, providing nesting beach for sea turtles and recreational opportunities for local residents and tourists..
ESSENTIAL FISH HABITAT	Disturbance from continual sedimentation suspension from eroding beach..	No substantial adverse impact. The ephemeral outcrop that would be buried are low relief and provide minimum EFH value.
MIGRATORY BIRDS	No effect.	No adverse effects are anticipated. If required, migratory bird protection plan would be implemented.
VEGETATION	No effect.	No adverse effects are anticipated.
WATER QUALITY	No effect.	No effect anticipated. If necessary, turbidity monitoring shall be performed.
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE	No effect.	No effect anticipated.
NAVIGATION	No effect.	Dredge barge could temporarily alter navigation patterns. At completion of the project navigation would return to normal without any lasting adverse impacts.
ECONOMICS	Continued beach erosion would have an adverse impact on recreation which adds substantial revenues to the local economy.	Shore protection would benefits the local economy.
CULTURAL RESOURCES	No effect.	A determination is pending on the project's potential to impact cultural resources within the identified borrow area.

ENVIRONMENTAL FACTOR	Alternative 1: No Action Status Quo	Preferred Plan Alternative 2: Beach Nourishment with Periodic Renourishment from Offshore Borrow Source
RECREATION	No effect.	Temporary disturbance due to project dredge and construction activities. .
AESTHETICS	No effect.	Construction equipment and stockpile of fill material prior to grading would have a temporary impact on this value. However, at the completion of construction, no long-term impacts would result.
NOISE	No effect.	Equipment operations would increase the noise levels. Levels would return to normal at conclusion of project construction.

3 AFFECTED ENVIRONMENT

The Affected Environment section succinctly describes the existing environmental resources of the areas that would be affected if either of the alternatives were implemented. This section describes only those environmental resources that are relevant to the decision to be made. It does not describe the entire existing environment, but only those environmental resources that would affect or that would be affected by the alternatives if they were implemented. This section, in conjunction with the description of the "no-action" alternative forms the base line conditions for determining the environmental impacts of the proposed action and reasonable alternatives.

3.1 GENERAL ENVIRONMENTAL SETTING

The North Boca Raton shoreline has been fully developed by residential and public land uses with a substantial amount of shoreline dedicated to publicly owned and accessible open space and recreation areas. The climate is subtropical and greatly influenced by the proximity of the Atlantic Ocean. Annual precipitation averages approximately 60 inches per year in West Palm with a maximum temperature approximately 92° Fahrenheit (F) and a minimum temperature of 58° F.

Vegetating the dune areas of the shoreline are pioneer species such as salt grass, sand spur, wild bean, seaside spurge, sea grape and sea oats. Wildlife is limited to small mammals, reptiles, and a variety of shore and wading birds. Palm Beach County beaches provide critical nesting habitat for two species of endangered marine turtles, the green and leatherback sea turtles, and is one of the largest nesting habitats for the loggerhead sea turtle in the western hemisphere. During 1998, in Palm Beach County, a total of 14,057 loggerhead nests (or 16% of Florida nests), 1,278 green nests (or 23% of Florida nests), and 138 leatherback nests (or 39% of Florida nests) were documented along Florida's surveyed beaches. Species identified as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) may occur on the beaches of the project area and in the

offshore waters within the immediate project area and vicinity. A significant number of the sea turtles using the sandy beaches within the project area for nesting May to September.

Offshore of the project area is a barrier reef hardbottom formation located approximately 4,500 feet seaward of the coastline. Nearer to shore a series of small patch reef hardbottom habitats are located, approximately 1,500 feet from shore. The area offers a wide range of habitat for saltwater fishes and is known for its offshore sport fishing with nearby marinas providing a base of operations for many sport fishing and pleasure boats.

3.1.1 STORM EVENTS

The coastline of Palm Beach County is low-lying and vulnerable to storm surge and other damaging storm events. Tropical storms and hurricanes typically occur between the months of June and November and generally originate in the tropical and subtropical latitudes of the Atlantic Ocean north of the equator. Frontal weather patterns driven by cold arctic air masses during the winter months (December through March), reach South Florida with greater frequency. These fronts typically generate southwest winds changing to the northwest before frontal passage, then shifting to the northeast behind the front. If the northeaster occurs when the moon is in perigee, the winds are accompanied by abnormally high tides. The surges and waves caused by cyclonic disturbances and northeaster storms present a major threat to the stability of the beaches of Palm Beach County (Coast of Florida Study, 1996).

3.1.2 WINDS

The direction, intensity, and duration of winds in the project area noticeable change during summer and winter months. Most common winds are from the northeast to the southeast and average about 9.7 miles per hour. During the fall and winter months, winds are often out of the northwest and northeast due to cold fronts and associated low areas of pressure. Winds during the summer months are characterized by tropical weather systems that travel east to west in the lower latitudes.

3.1.3 WAVES

The wave size and strength of local seas is primarily affected by wind speed, duration, and length of open water over which the wind blows (fetch). The primary cause of beach erosion is the action of waves that break on the shoreline or beach and contribute to sediment transport. Waves cause littoral movement in the long-shore direction, as well as the onshore and offshore directions depending upon intensity and approach angle. Winds in the project area are generally north to south which result in waves approaching the shoreline from the north and northeast. The directional waves cause a net southerly sand movement while waves from the south and southeast can cause a temporary northerly movement of sediments. Waves from the east create very little long-shore sand movement. The direction of the littoral drift along the coast of Florida is seasonal due to the changes in wind and wave direction currents and the resulting longshore currents (Coast of Florida Study, 1996).

Waves experienced in the project area are usually driven by sea or swell forced by local and distant winds, respectively. Sea forced waves are generally quite steep (large wave height to wavelength ratio) and can be random due to superposition of the waves from various directions. Swell force waves are generated from distant storms or open water prevailing winds that are not heavily influenced by local winds. These waves usually have longer periods and longer wave lengths. Swells are generally produced by northeasters or hurricanes that often impact shorelines creating mild to severe erosional conditions.

3.1.4 TIDES

The tides in the project area are semidiurnal with a mean range of approximately 2.6 feet and a spring range of approximately 3.0 feet. Highest tides occur in association with storms as a combination of wind and wave setup, barometric pressure setup, and normal peak tides (full moon and new moon conditions).

3.1.5 STORM SURGE.

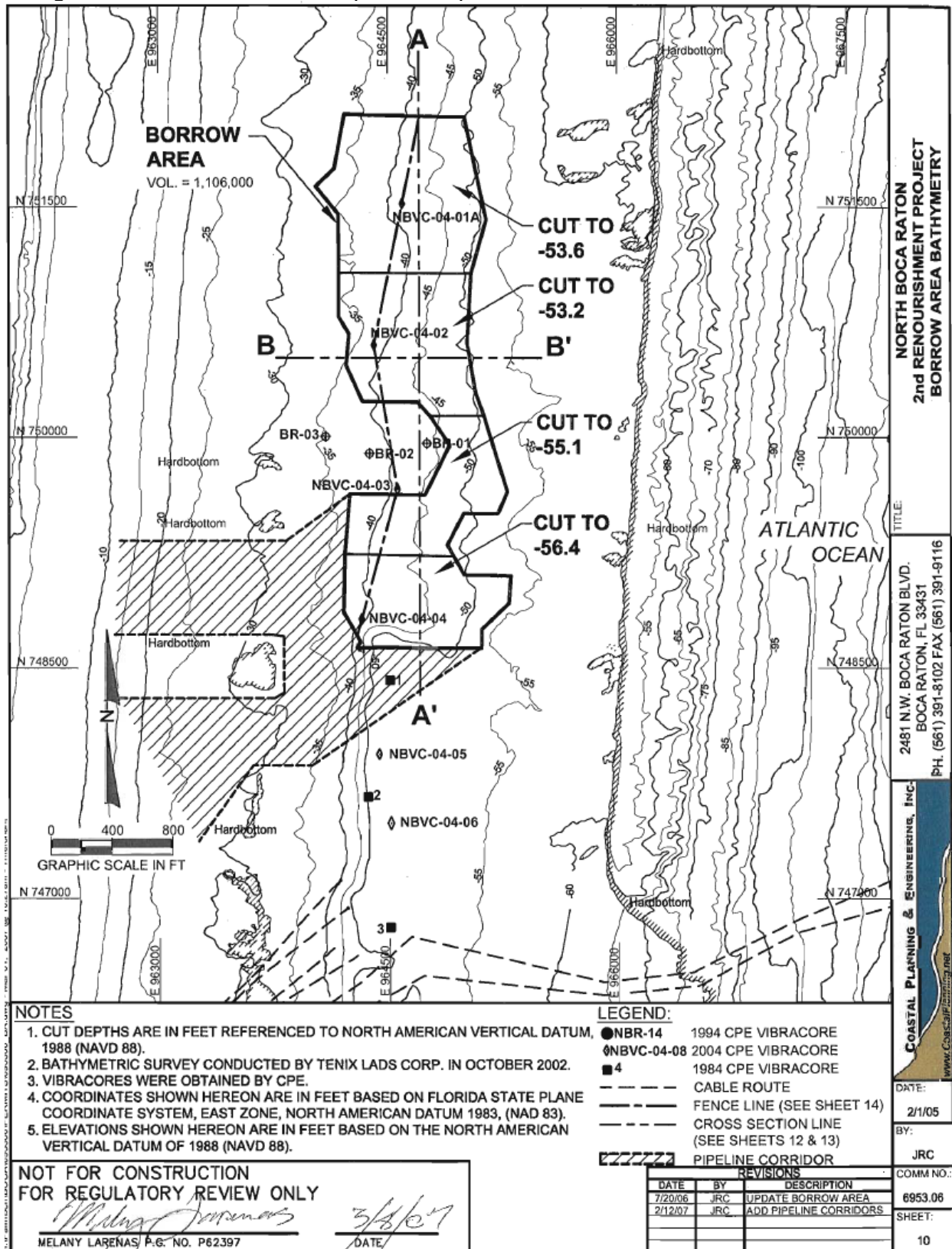
Storm surge is the rise of the ocean surface above its normal high-tide level. The increased water level elevation is the result of the interaction of waves, wind shear stress, and atmospheric pressure. With a higher surge, larger waves are able impact the shoreline with more energy which accelerates beach erosion.

3.1.6 SAND SOURCE LOCATION.

The USACE *Coast of Florida Erosion and Storm Effects Study Region III, Preliminary Feasibility Report* (1996) estimated the total project requirement for the 50-year life of the Palm Beach County Shore Protection Program to require a total volume of 26,253,000 cubic yards of beach compatible sand. The report further determined that approximately 655,025,947 cubic yards would be available from Palm Beach County identified borrow sources.

The borrow area proposed to provide the material for the second renourishment is referred to as Borrow Area B and is located approximately ½-mile offshore of the northern project limit. The borrow area runs parallel to shore between FDEP reference monuments R-202 and T-205 and is located from 2,000 to 2,500 feet offshore from the shoreline (**Figure 2**). Borrow Area B is the most northerly located of two borrow areas identified to provide material for the renourishment of the North Boca Raton shoreline. The borrow site contains an estimated 1,106,000 cubic yards of sand. **Figure 5** . provides a view of the cut depths proposed within the borrow area.

Figure 5. Borrow Area B Proposed Depths and Cuts



3.2 VEGETATION

Existing vegetation in the general area includes shrubs and trees such as sand pine, Australian pine, sea grape, and wax myrtle. Closer to the ocean on the dunes, the vegetation is a mixture of established and pioneer species such as salt grass, sand spur, wild bean, seaside spurge and sea grape.

3.3 THREATENED AND ENDANGERED SPECIES

3.3.1 SEA TURTLES

Palm Beach County is within the normal and active nesting areas of three species of sea turtles, the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and the leatherback sea turtle (*Dermochelys coriacea*). The loggerhead (*C. caretta*) is listed as a threatened species, while the green and leatherback are listed as endangered under the U.S. Endangered Species Act of 1973. The nesting season for all species of sea turtles, as defined by the Florida Fish and Wildlife Conservation Commission, is between March 1 and October 31 in Palm Beach County.

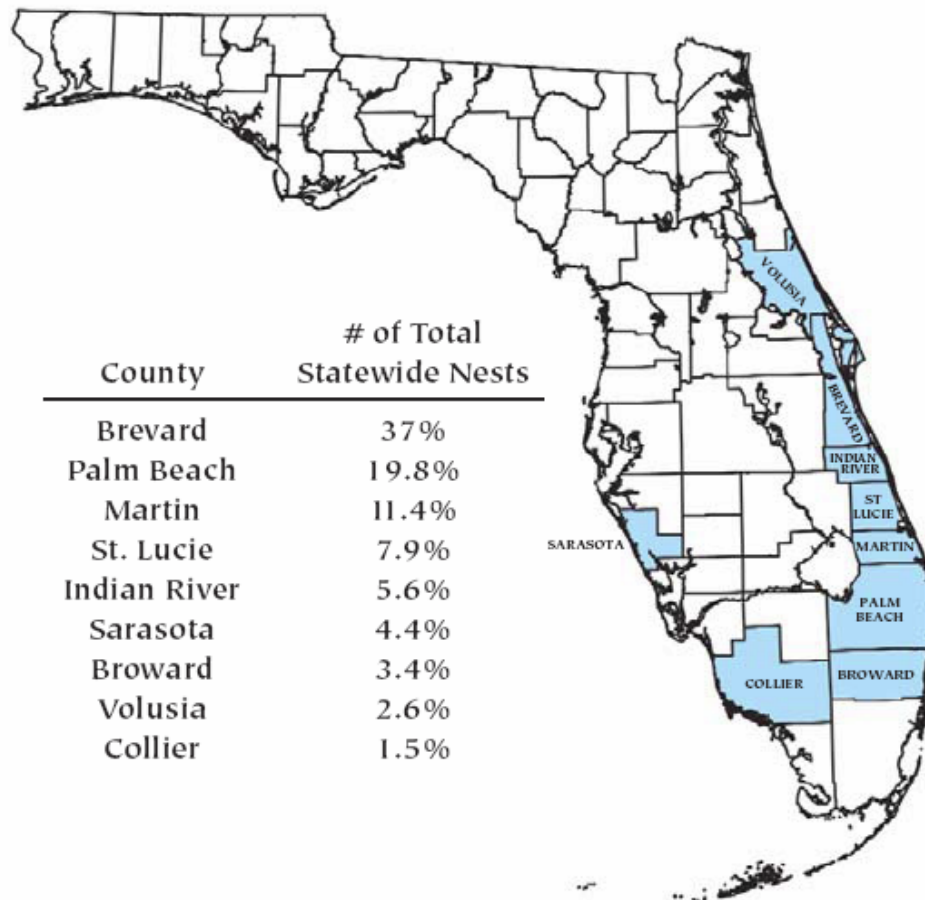
Over the years, a significant portion of the North Boca Raton shoreline has been lost to erosion. Beach erosion destroys sea turtles nests by either washing the eggs out of the eroding beach or by submergence of the eggs in sea water, effectively killing the developing sea turtles. Sea turtles may return to the ocean without nesting if the beach is too narrow or unsuitable for nesting purposes; this is usually referred to as “false crawls.” **Table 6** provide a partial listing of the FDEP, Bureau of Beaches and Coastal Systems (2006) of Palm Beach County designated critically eroded beaches by reference monument locations.

Critical and Non-Critically		
Table 6 Eroded Palm Beach County Shoreline		
PALM BEACH COUNTY	Miles of Eroded Shoreline	
	Critical	Non-Critical
R1 – R10	1.5	0
N&S Shore, Jupiter Inlet	0	0
R12 – R38	5.0	0
R38 – R40	0	0.4
R58 – R60.	0	0.5
R60.5 – R69	1.7	0
R76 – R128	10.9	0
R133.5 – R136.7	0.7	0
R152 – R168	3.3	0
R176 – R190	2.9	0
R204 – R227.9 (Boca Raton)	5.0	0

The City of Boca Raton has an active sea turtle monitoring protection program that relocate sea turtle eggs threatened or endangered from erosion or other threatening events. **Figure 6** show a percentage of loggerhead nesting in nine counties over a 4-year period and **Tables 7, 8, and 9** provide a historic 18-year record of sea turtle nesting behavior in Palm Beach County for the loggerhead, green, and leatherback sea turtles.

FIGURE 6.

Florida Counties with the Greatest Average
Percentage of Loggerhead Nests, 2000-2004



Source: <http://research.myfwc.com/>

November 2005

Table 7: Loggerhead Annual Nesting in Palm Beach County

PALM BEACH					
Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	46.2	5573	3484	4/21/88	10/1/88
1989	57.1	7830	4620	4/15/89	9/20/89
1990	66.5	12394	8311	4/16/90	9/4/90
1991	64.1	11919	9369	4/12/91	9/19/91
1992	61.1	14357	9331	3/16/92	9/24/92
1993	47.6	9424	8030	4/24/93	9/9/93
1994	55.8	12606	12384	4/13/94	10/31/94
1995	48.8	14123	14274	4/15/95	9/8/95
1996	55.5	15284	12543	4/10/96	9/28/96
1997	59.9	11592	8999	4/4/97	9/11/97
1998	63.4	14056	15348	4/5/98	9/15/98
1999	63.6	13182	12927	4/1/99	8/30/99
2000	63.6	14187	16124	4/8/00	9/16/00
2001	63.6	13757	12957	4/15/01	9/23/01
2002	67.4	13032	12841	3/29/02	10/2/02
2003	68.7	12963	15050	3/29/03	9/12/03
2004	68.3	10759	15822	4/14/04	9/13/04
2005	63.5	10791	14345	4/24/05	9/24/05

Source: <http://www.pbcgov.com/>

March 28, 2007

Green Sea Turtles Annual Nesting
in Palm Beach County

Table 8

PALM BEACH					
Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	46.2	81	28	5/13/88	9/18/88
1989	57.1	90	70	5/3/89	8/27/89
1990	66.5	728	435	5/14/90	10/3/90
1991	64.1	153	97	4/29/91	9/2/91
1992	61.1	553	478	5/4/92	9/19/92
1993	47.6	154	109	5/24/93	9/27/93
1994	55.8	936	686	5/5/94	10/15/94
1995	48.8	184	139	5/23/95	9/8/95
1996	55.5	864	807	5/23/96	9/28/96
1997	59.9	227	157	5/26/97	9/10/97
1998	63.4	1278	2246	5/1/98	10/1/98
1999	63.6	194	135	3/19/99	8/25/99
2000	63.6	1942	1931	4/30/00	9/7/00
2001	63.6	175	103	3/30/01	9/25/01
2002	67.4	2339	2824	4/24/02	10/10/02
2004	68.7	767	846	4/4/03	10/16/03
2004	68.3	968	1283	4/17/04	10/8/04
2005	63.5	2252	3142	6/3/05	10/16/05

Source: <http://www.pbcgov.com/> March 28, 2007

Table 9: Leatherback Annual Nesting in Palm Beach County

PALM BEACH					
Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	46.2	41	2	3/22/88	7/10/88
1989	57.1	39	13	4/11/89	8/13/89
1990	66.5	81	2	3/14/90	7/8/90
1991	64.1	86	7	4/1/91	7/10/91
1992	61.1	104	12	3/18/92	7/16/92
1993	47.6	65	37	4/12/93	7/31/93
1994	55.8	129	27	3/5/94	8/19/94
1995	48.8	72	6	4/7/95	7/20/95
1996	55.5	94	24	3/12/96	8/9/96
1997	59.9	172	33	2/27/97	7/7/97
1998	63.4	138	47	3/18/98	8/7/98
1999	63.6	221	32	3/10/99	8/5/99
2000	63.6	160	33	3/6/00	8/3/00
2001	63.6	334	36	3/15/01	7/29/01
2002	67.4	250	47	3/1/02	8/9/02
2003	68.7	306	50	3/7/03	7/14/03
2004	68.3	166	25	3/3/04	8/18/04
2005	63.5	284	52	3/11/05	6/28/05

Source: <http://www.pbcgov.com/> March 28, 2007

3.3.2 WEST INDIAN MANATEE (*TRICHECHUS MANATUS*).

The estuarine waters around the inlets and bays within south Florida provide year-round habitat for the West Indian manatee. A larger winter transient population exists due to their winter southward migration patterns. Manatees reside and feed mainly in the estuarine areas and around inlets and are only occasionally observed in the open ocean. No significant West Indian manatee foraging habitat exists in the areas around the project site in North Boca Raton, and no known congregation of manatee occur in the nearshore environments (USACE, 1996).

Collision of manatees with boats has been historically one of the major causes of injury and death. Manatees are most common in winter months and the project would occur during summer months. Still, the potential exists for chance manatee encounters and impacts during construction transferring activities from ocean (dredging) to shore (material discharge).

3.4 HARDGROUNDS.

3.4.1 SURF ZONE HARDBOTTOM.

Anastasis formation limestone bedrock that underlies much of the unconsolidated sand and soil of Palm Beach County are common outcroppings in Southern Palm Beach County, including Boca Raton. South of the project's limits, an exposed formation of the rock outcrop fronts Red Reef Park. These outcrops are ephemeral and subject to periodic inundation with sand either seasonally or over a period of years. The relief provide when the rock is exposed can vary from barely visible above the sand surface to about 2 feet on the offshore edges of the formation. Located in a physically stressful zone of the ocean, organisms associated with these outcrops experience intense wave activity, high turbidity, high sedimentation, sand inundation, and temperature fluctuation. Rock outcrops in this area, when exposed provide refuge for fish and attachment substrate for opportunistic epibiota. Due to the stressful dynamics experienced at this location, diversity of species colonizing the surf zone outcrop is limited and present only during the formation's exposure. When sand reburies the outcrop, the fish moves on to other areas. Algae represents from 50 to 75 percent of the epibiotic coverage of the outcrop. The most commonly observed assemblages of algae, invertebrate and fish occurring at the surf zone rock outcrop is listed in **Tables 10, 11 and 12**.

**Representative Offshore Assemblage
of Invertebrates and Fish Likely**

Table 10: Occurring at Surf zone/Low-relief Hardbottom Habitats

Species	Scientific Name	Common Name
Algae	<i>Padina produnda</i>	
	<i>Jania sp.</i>	
	<i>Caulerpa sp.</i>	
	<i>Halimeda sp.</i>	
	<i>Bryothamnion triquetrum</i>	
Sponge	<i>Cliona celata</i>	Red boring sponge
	<i>Bryozoans</i>	
	<i>Hydrozoans</i>	
Fish	<i>Eucinostomus argenteus</i>	Mojarras
	<i>Diplodus argenteus</i>	Silver porgies
	<i>Anisotremus Surinamensis</i>	Black margate
	<i>Kyphosus sectatrix</i>	Bermuda chub
	<i>Pomacentridae</i>	Damselfish
	<i>Abudefduf saxatilis</i>	Sargeant majors
	<i>Stegastes fuscus</i>	Dusky damselfish

3.4.2 PATCH REEF/ NEARSHORE HARDBOTTOM COMMUNITIES.

In 1987, The USACE, Jacksonville District study on, “Beach Control and Shore Protection at Boca Raton” documented the presence of 17 separate small areas of hardbottom (of varying area and relief). Located using side-scan sonar, the hardbottom zone was located approximately 1,500 feet seaward of the shoreline and in 30 to 35 feet (NGVD) of water. Considered mid-depth or patch reef hardbottom, this zone is comprised of fossilized limestone outcroppings with some consolidated platforms and coral rubble. The majority of the hardbottom formations were documented as having a minimal vertical relief above the existing sand bottom.

Sedimentation is a natural occurrence at these mid-depth and low-relief hardbottom formations. These areas receive more sedimentation coverage than deep-water hardbottom due to their location closer to shore in more shallow water. This zone is also more susceptible to sand suspension and transport from storms than the barrier hardbottom zones located in the deeper offshore waters.

The dominant invertebrate communities consist of the gorgonians and sponges with the coverage of scleractinian corals diversity and extent is generally dependent upon locations of highest relief. **Tables provide 10** a listing of observed species occurring or likely to occur at the patch reef hardbottom zones.

Representative Assemblage of Invertebrate and Fish
Table 11: Likely Occurring at Mid-Depth/Low-relief Hardbottom

Species/Genera	Scientific Name	Common Name
Invertebrates	<i>Pseudopterogoria</i>	
	<i>Eunicea</i>	
	<i>Pleaxaura</i>	
Sponges	<i>Spinosella</i>	
	<i>Ircinia</i>	
	<i>Haliclona</i>	
	<i>Aplysina</i>	
Coral	<i>Montastrea cavernosa</i>	Large star coral
	<i>Dichocoenia stokesi</i>	Elliptical star coral
	<i>Diploria clivosa</i>	Brain coral
	<i>Meandrina meandrites</i>	Fungus coral
	<i>Sidestrea</i> sp.	Star coral
	<i>Gorgonia ventalina</i>	Sea fan
Fish	<i>Pomacentridae</i>	Damelfishes
	<i>Haemulidae</i>	Grunt
	<i>Diodontidae</i>	Porcupine fish
	<i>Monacanthidae</i>	Filefish
	<i>Balistidae</i>	Triggerfish
	<i>Labridae</i>	Wrasses

3.4.3 BARRIER REEF HARDBOTTOM COMMUNITIES.

Approximately 4,500 feet from the shoreline lies an offshore barrier reef hardbottom zone that parallels the coastline. Water depths over the barrier reef hardbottom zone range from approximately 50 feet (to the west) to depths exceeding 100 feet (to the east) of the hardbottoms. This hardbottom zone is composed of fossilized limestone rock that has been colonized by a variety of marine organisms. The hardbottom zone within the project area contain two natural gaps, one locate off the north end and the other off the south end of Spanish River Park. The sand bottom landward of the hardbottom lies in approximately 60 to 65 feet (NGVD) of water, rising up to the reef's crest which is approximately 50 feet (NGVD). **Tables 10, 11, and 12** provides a listing of the marine invertebrates and fish species that may occur at the barrier reef hardbottom zone (USACE, 1987).

Table 12: Representative Assemblage of Fish and Invertebrates Likely Occurring at Barrier Reef Hardbottom Habitat

Species/Genera	Scientific Name	Common Name
Sponges	<i>Eunicea</i>	Sea rods
	<i>Pseudopterogorgia</i>	Feather plumes
	<i>Xestospongia muta</i>	Barrel sponge
	<i>Ircinia campana</i>	Vase sponge
	<i>Spinosella vaginalis</i>	Tube sponge
	<i>Niphates digitalis</i>	Green rope sponge
	<i>Iotrochota birotulata</i>	Green rope sponge
Corals	<i>Brireum</i>	Octocoral
	<i>Monastrea cavernosa</i>	Star coral
	<i>Dichocoenia stokesi</i>	Elliptical star coral
	<i>Meandrina meandrites</i>	Brain coral
	<i>Diploria sp.</i>	Smooth brain coral
	<i>Acropora cervicornis</i>	Staghorn coral
	<i>Siderastrea sp.</i>	Rough starlet coral
	<i>Mycetophyllia sp.</i>	Fungus coral
	<i>Madracis decactis</i>	Green cactus coral
	<i>Oculina diffusa</i>	Eyed/Ivory bush coral
	<i>Porites sp.</i>	Club Fingered coral
Fish	<i>Pomacentridae</i>	Damselfish
	<i>Haemulidae</i>	Grunt
	<i>Diodontidae</i>	Porcupinefish
	<i>Monacanthidae</i>	Filefish
	<i>Balistidae</i>	Triggerfish
	<i>Labridae</i>	Wrasses

3.5 BORROW AREA.

Borrow Area B has been identified as the source of sand for the second renourishment of the shoreline of North Boca Raton. The borrow site is approximately 62.5 acres in size and located away from the deep water offshore hardbottom reefs. The separation between the borrow site and the barrier reef is from 800 to 1,200 feet (see Figure 3). The distance between the patch reef (low-relief) hardbottom to the west is greater than 400 feet at its closest point. The borrow area has low silt content and grain size characteristics that are similar to those found at the project beach. Very low silt content material reduces the potential for turbidity generated during construction. Beach nourishment material at equilibrium would cover the hardbottom within the surf zone that has been re-exposed over the past several years due to shoreline recession. Impacts to these resources have been included in past mitigative actions.

3.6 FISH AND WILDLIFE RESOURCES

The Atlantic Ocean off the southeast coast of Florida offers a wide range of habitat for saltwater fishes. The area has a rich and diversified ichthyofauna due to distribution of many tropical and subtropical species overlapping the range of those species typical to the south Atlantic coast. Fish species inhabiting or temporarily frequenting the area may number in the hundreds, some of which are commercially important. **Tables 10, 11, and 12** list some of the species common to the Boca Raton coastal waters. Shore birds that are documented to occur along the Palm Beach County coastline are listed in **Table 13**. This table extracted from a nine-day monitoring report submitted for the nourishment of the shoreline of Central Boca Raton documents the occurrence of 37 different species of migratory and/or shorebirds. The monitoring site is located from the Boca Raton Inlet north to FDEP monument marker R-218, approximately 6,000 feet (1828 meters) south of the North Boca Raton southern project limit located immediately south of R-212.

: Shore and Wading Birds Observed from the Boca Raton Inlet Table 13 to Florida Survey Monument R-218							
Species		General Abundance			Potential for Impacts		
Scientific Name	Common Name	Low	Medium	High	No	Possible	Yes
<i>Anas fulvigula</i>	Mottled duck	X			X		
<i>Ardea Herodias</i>	Great blue heron	X			X		
<i>Arenaria interpres</i>	Ruddy turnstone	X			X		
<i>Butorides virescens</i>	Green heron	X			X		
<i>Calidris alba</i>	Sanderling	X					X
<i>Cardinalis cardinalis</i>	Northern cardinal	X			X		
<i>Cathartes aura</i>	Turkey vulture	X			X		
<i>Catotrophorus semipalmatus</i>	Willet	X				X	
<i>Columba livia</i>	Rock dove	X			X		
<i>Corvus ossifragus</i>	Fish crow	X			X		
<i>Dendroica discolor</i>	Prairie warbler	X			X		
<i>Dendroica palmarum</i>	Palm warbler	X			X		
<i>Egretta caerulea</i>	Little blue heron	X			X		
<i>Falco columbarius</i>	Merlin	X			X		
<i>Falco peregrinus</i>	Peregrine falcon	X			X		
<i>Falco sparverius</i>	Kestrel	X			X		
<i>Fregata magnificens</i>	Magnificent frigatebird	X			X		

Species		General Abundance			Potential of Impacts		
Scientific Name	Common Name	Low	Medium	High	No	Possible	Yes
<i>Larus delawarensis</i>	Ring-billed gull	X					X
<i>Melanerpes carolinus</i>	Red-bellied woodpecker	X			X		
<i>Mniotilta varia</i>	Black and white warbler	X			X		
<i>Morus bassanus</i>	Northern gannet	X			X		
<i>Pandion haliaetus</i>	Osprey	X			X		
<i>Parula Americana</i>	Northern parula	X			X		
<i>Pelecanus occidentalis</i>	Brown pelican			X			X
<i>Quiscalus major</i>	Boat-tailed grackle	X			X		
<i>Sterna antillarum</i>	Least Tern	X					X
<i>Sterna maxima</i>	Royal Tern			X			X
<i>Sterna sandvicensis</i>	Sandwich Tern	X					X
<i>Streptopelia decaocto</i>	Eurasian Collared Dove	X			X		
<i>Stelgidopteryx serripennis</i>	North Rough-winged Swallow	X			X		
<i>Sturnus vulgaris</i>	European Starling	X			X		
<i>Zenaida macroura</i>	Mourning Dove	X			X		

Legend
Low = 0 -5 individuals per day
Medium = 6-20 individuals per day
High = Over 20 individuals per day
Note: Numbers are based on a nine-day continuous beach survey

Source: Coastal Planning and Engineering (2004)

3.7 ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act requires identification of habitats needed to support sustainable fisheries and comprehensive fishery management plans with habitat inclusions. The Act also requires preparation of an Essential Fish Habitat (EFH) assessment and coordination with National Marine Fisheries Service (NMFS) when impacts to essential fish habitat are likely to occur. EFH is defined by Congress in the Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

EFH consultation for the proposed North Boca Raton Shore renourishment project was initiated with issuance of the Department of the Army (DA) public notice on January 22, 2007, and under the notices of availability issued February 16, 2007 and May 9, 2007. The project would impact approximately 0.1 acre of surf zone hardbottom habitat that has become re-exposed due to shoreline recession. This re-exposed habitat was mitigated in 1988 prior to construction of the original nourishment project. No further mitigation for re-exposed and previously mitigated EFH resource is proposed. EFH impacts in the water column are addressed in Section 4.0 Environmental Effects.

Federally managed species identified by the South Atlantic fisheries Management Council as likely to occur in the project area include shrimp, red drum, reef fish, stone crab, spiny lobster, migrating/pelagic fish, snapper, grouper, and golden crab (NMFS, 1999). The nearshore hardbottom habitat in the project area and offshore reefs adjacent to the borrow areas are designated as Essential Fish Habitat – Habitat Areas of Particular Concern (EFH-HAPC) for the snapper-grouper complex (SAFMC, 2000). Hardbottom habitats from Jupiter Inlet through the Dry Tortugas are specifically designated EFH-HAPC for spiny lobster (NMFS, 2007).

3.8 COASTAL BARRIER RESOURCES

Federal monies can be spent within the Coastal Barrier Resource System for certain activities, which are exempted under Section 6, Exceptions To Limitations On Expenditures. These activities include: (1) projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats; (2) establishment of navigation aids; (3) projects funded under the Land and Water Conservation Fund Act of 1965; (4) scientific research; (5) assistance for emergency actions essential to saving lives and the protection of property and the public health and safety, if preferred pursuant to the Disaster Relief, Emergency Assistance Act, and National Flood Insurance Act and are necessary to alleviate the emergency; (6) maintenance, repair, reconstruction, or repair, but not expansion of publicly owned or publicly operated roads, structures, or facilities; (7) nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system; (8) any use or facility necessary for the exploration, extraction, or transportation of energy resources; (9) maintenance or construction of improvements of existing Federal navigation channels, including the disposal of dredge materials related to such projects; and (10) military activities essential to national security (USFWS, 2003).

3.9 WATER QUALITY

The waters off the coast of Palm Beach County are listed as Class III waters by the State of Florida. Class III category waters are suitable for recreation and propagation by fish and wildlife. Turbidity is the major limiting factor in coastal water quality in South Florida. Turbidity expressed in Nephelometric Turbidity Units (NTU) quantitatively describes the light-scattering properties of the water.

This measurement does not address the characteristics of the suspended material that creates turbid conditions. The source of turbidity may be due to organics and sediments that become re-suspended from local waves and currents. Turbidity levels have been determined from past studies to be the lowest in summer months during periods of calm ocean and weather conditions and the highest in winter months during storm events. Florida has adopted standards in an effort to minimize impacts from beach restoration activities. These standards restrict turbidity values to fewer than 29 NTU above ambient levels outside the turbidity mixing zone for Class III waters (Florida Coastal Study, 1996). If turbidity levels exceed 29 NTU above background specific actions including cessation of construction must be implemented to bring turbidity levels into compliance.

3.10 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

There are currently no hazardous, toxic and radioactive waste producers adjacent to the project site that discharge effluents near the North Boca Raton shoreline. The potential borrow area is sufficiently removed from shipping lanes and is located adjacent to high energy areas experiencing littoral drift. Studies have also shown that contaminants usually do not absorb to sand particles with grain size and composition suitable for beach restoration (USACE, 1994).

3.11 AIR QUALITY

Ambient air quality along coastal North Boca shoreline is generally good due to prevalent ocean breezes from the northeast through the southeast.

3.12 NOISE

Ambient noise levels in the project area are low to moderate and are typical of recreational environments. The major noise producers include the breaking surf, adjacent commercial and residential areas, and traffic (pedestrian, boat, vehicular, and airplane).

3.13 AESTHETIC RESOURCES

The renourishment of the beach would help maintain a wide beach that is visually appealing. A temporary impact would result to this value from the placement of dredge pipelines and the placement of beach sands prior to leveling out. The initial color of the sand obtained from the borrow area may also temporarily detract from this value. The sand would initially be a gray or medium gray color, and may require a period of several months to lighten under natural conditions.

3.14 RECREATION RESOURCES

The presence of construction equipment and personnel could temporarily detract from this value. Sections of the beach would be closed during construction and may temporarily impact recreational enjoyment opportunities in a limited area of the dry beach. Dredging activities may also temporarily affect recreational boating in the immediate area. The economic loss of these benefits to date would far exceed the prior estimates. Full use of the beach area and restoration of the recreational resources in the project area is anticipated upon project completion with added benefits realized from the wider beach.

3.15 NAVIGATION

Commercial navigation would not experience any impacts. Temporary impacts would result to individual boating enjoyment during construction, but only within the vicinity of the dredge. The project would have no permanent impact on this value.

3.16 HISTORIC PROPERTIES.

Surveys conducted in 1993 and 2003 indicate the possible presence of eligible cultural resources in the borrow area. No historic properties would be affected by the beach placement project.

4 ENVIRONMENTAL EFFECTS

This section is the scientific and analytic basis for the comparisons of the alternatives. See table 1 in section 2.0 Alternatives, for summary of impacts. The following includes anticipated changes to the existing environment including direct, indirect, and cumulative effects.

4.1 GENERAL ENVIRONMENTAL EFFECTS.

The beneficial effects from the placement of sand fill along the proposed project areas includes the establishment of a larger berm area for protection against storms and flooding and creation of additional dry beach for recreational activities. The historic placement of sand has been demonstrated to increase sea turtle nesting habitat provided that the sand is highly compatible with naturally occurring beach sediments and that compaction and escarpment remediation measures are incorporated into the project.

Potential negative effects to sea turtles from construction activities are listed in **Table 14**. Other project related conditions that may affect nesting may include the quality and color of the sand, the suitability of the nest incubation environment, and the ability of hatchlings to emerge from the nest.

Table 14 : Potential Negative Impacts on Female Sea Turtles Nesting or Hatchlings Success

Harassment - Disturbance or interference in the form of project construction while female sea turtles attempt to nest.
Project Lighting – Contribute to the hatchlings disorientation as they emerge from the nests.
Escarpments – Formations within the project area modify the behavior of nesting females within the project area (which results in false crawls or selection of unsuitable nesting sites for deposits of eggs).

Protective measures such as nest monitoring and relocation, minimal lighting use and/or shielding of construction lighting, compaction monitoring and tilling activities, and leveling escarpments prior to nesting season can minimize the potential for some of the known negative impacts to sea turtles.

The proposed borrow areas lies adjacent to reef communities of varying community composition, diversity, and density as described previously. Buffer zones would be established based upon the adjacent community characteristics to protect reef communities from mechanical damage and sedimentation and/or turbidity impacts. Construction reef edge sedimentation monitoring and a dredging pattern of alternating borrow areas may be required by State and Federal regulatory agencies to monitor project effects on these resources.

Indirect impacts would result to approximately 0.10 acre of re-exposed nearshore hardbottom located south of the beach nourishment area that has been previously mitigated in 1988. Direct and indirect impacts to approximately 1 acre of hardbottom resources located between R-204 and R-214 were mitigated with the creation of six reef modules and a rock groin. Minimization of resources was also achieved by maintaining a 400-foot buffer at the borrow site from hardbottom habitats. Post construction physical and environmental monitoring would be defined and approved in the FDEP and DA permit authorizations.

4.1.1 DUNE HABITAT.

Some native dune habitat in Boca Raton has historically been lost to either urban development, beach erosion, or a combination of the two. Protective measures during construction would be included in the plans and specifications to limit construction activities to those areas of unvegetated beach and dune, unless expressly authorized by the project permits.

4.1.2 SEAGRASS COMMUNITIES.

No seagrasses have been documented within the limits of the project area.

4.2 THREATENED AND ENDANGERED SPECIES

The project has the potential to impact sea turtles in the marine environment and on shore. Precautions would be in place to ensure the sea turtle is protected during all phases of construction:

4.3 HARDGROUNDS

Scattered hardbottom has become re-exposed within the area of fill equilibrium. Re-exposed hardbottom within the footprint of the original 1988 project would not require additional mitigation. These resources were included in the initial mitigative efforts to compensate for loss of ephemeral resources located between R-204 and R-214. Minimization of resources impacts were also achieved by maintaining a 400-foot buffer at the borrow site from hardbottom habitats. Post-construction physical and environmental monitoring would be defined and approved in the FDEP and DA permit authorizations.

4.4 ESSENTIAL FISH HABITAT ASSESSMENT

Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species, and their habitat, as well as other ecosystem components during dredging of the borrow area and beach placement of the material. The proposed project will affect approximately 13.34 acres of coastal habitat identified as EFH. From 0.01 to 1.3 acres of nearshore hardbottom would be impacted by project construction. In addition to EFH for the Federally managed species listed in Section 3.7.

The designation of Habitat Areas of Particular Concern (EFH-HAPC) identified subsets of EFH Habitat that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Offshore areas of high habitat value or vertical relief, and habitats used for migration, spawning, and rearing of fish and shellfish have been included within HAPC (NMFS, 2000). Categories of HAPC in the vicinity of the proposed project include reefs and hardbottom habitats including wormrock. The nearshore hardbottom habitat in the project area and offshore reefs adjacent to the borrow areas are designated as EFH-HAPC for the snapper-grouper complex (EFH-HAPC).

Most motile surf zone fishes should be able to flee the nearshore fill sites and return after construction. Placement of sand fill at the beach disposal site would result in the direct burial of approximately 1.3 acres nearshore hardbottom habitat which may include some wormrock habitat. Mitigation creation (six artificial reef modules and groin) in 1988 included impacts to hardbottom that in future would become exposed between R-204 to R-214. Currently exposed hardbottom that would be buried by project construction have been considered compensated with the past mitigation actions.

Potential impacts of turbidity and sedimentation to offshore hardbottom habitat adjacent to the borrow areas would be avoided or minimized with the construction of a minimum 200-foot buffer.

4.5 HISTORIC PROPERTIES

Pending results of further evaluation, potential cultural resources in or near the borrow site would be avoided with the appropriate buffer zone.

4.6 SOCIO-ECONOMIC

The economic benefits enjoyed by the local government and the State would not be adversely impacted. Some sections of the beach would be temporarily closed due to construction activities.

4.7 AESTHETICS

A temporary impact to this value would result during construction from placement of dredged pipelines, machinery, and temporary stockpile of dredged sand before it is graded to the design configuration. These impacts are temporary and propose no long-term impacts to this value.

4.8 RECREATION

Recreational enjoyment is a significant amenity to enjoyment of life in this community. The forms of recreations include from walking along the beach, swimming, offshore fishing, snorkeling and boating activities. There may be some temporary interruptions to these activities. The project may take from 60 to 90 days to complete. These impacts would not be long-term as related to this value. Restoration of the beach at completion of the project with stabilization of the eroded shoreline and a wider beach would provide significant net benefits.

4.9 COASTAL BARRIER RESOURCES

The project area is a coastal barrier resource and is characterized by public and residential development. No lands within the project area are designated as protected under the Federal coastal Barrier Resources Program. No adverse impact would result from construction of the preferred alternative. The project would provide protection to coastal resources and existing public and private infrastructure.

4.10 WATER QUALITY

Temporary impact would result to water quality during construction from project derived turbidity associated with the transport and manipulation of material within the borrow and fill sites. The City of Boca Raton has requested a mixing zone variance for the project fill site that extends 300 meters offshore and 2,000 meters downcurrent from the point of discharge on the beach. No mixing zone variance has been requested at the borrow site. The FDEP decision on this request and permit authorization is pending. Past nourishment actions had larger mixing zones approved and did not result in any adverse impacts on this value. It is anticipated that the proposed action would have a similar “no adverse impact” effect.

4.11 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

There are no conditions that would introduce pollutants or toxicants to the project area. The contractor would have a contingency plan to handle immediately any spill of oil or similar material. No adverse impact would result from any project-related activity.

4.12 AIR QUALITY

The project area is a coastal environment and as such maintains a high level of air quality. The use of construction equipment's injection into the environment would have some impact on this value. These impacts would be harmless to most individuals and would be of short-durations, only during construction activities. No permanent or long-term impacts would result.

4.13 NOISE

The use of construction equipment and ingress/egress of construction vehicles would have a noticeable impact on this value. These impacts are short-term and only during construction activities.

4.14 PUBLIC SAFETY

There should be no impact on this value. Residents would be advised of the need for caution while traversing the construction site. Any public safety concerns would be present only during construction and would not be a permanent condition.

4.15 CUMULATIVE IMPACTS

Cumulative impact is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7).

This project is one of four construction projects proposed to nourish the shoreline of Boca Raton. The need for the project exceeds the environmental impacts that may be associated with initial placement of beach material. The project proposes adverse cumulative or secondary impacts.

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The proposed action, in addition to past projects and any future actions, primarily impacts the beach, nearshore hardbottom epibenthic and fish communities and the offshore sand borrow areas and adjacent reef epibenthic communities. The beach will continue to be maintained as an area suitable for shoreline protection, recreation, and wildlife habitat. The current offshore borrow areas will likely be depleted over the life of the authorized project, and alternative sand sources will have to be explored. Utilization of upland sources may eventually be required. Should this result, elimination of natural upland resources may result.

Repeated placement of pipeline with periodic renourishment (authorized twice more in Segment II, and three more times in Segment III), would eventually have a direct negative impact on nearshore hardbottom communities. Careful placement of pipelines during the proposed project and adherence to the protective measures described in Section 4.34 would minimize direct impacts to hardbottom resources. The establishment of permanent pipeline corridors for future renourishment use also would minimize impacts and avoid foreseeable future impacts.

4.15.1 PROTECTED SPECIES.

Environmental commitment would be in place for the manatee and the sea turtles. All efforts would be employed to avoid any adverse impacts to the species.

4.16 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.16.1 IRREVERSIBLE

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. The use of sand from the proposed borrow area would irreversibly deplete the suitable sand reserves for renourishment project proposed for the project life of 50 years. The sands may not be replenished over the 50-year period to provide a future source of material from this portion of the borrow area.

4.16.2 IRRETRIEVABLE

An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource, as they presently exist are lost for a period of time. Benthic infaunal organisms within the project area would be temporarily lost due to construction but are expected to recover quickly, within one year or less.

An irretrievable commitment of nearshore rock habitat would occur, in that, existing rock outcrop be buried. These resources may be mitigated, but given the success and quantity of mitigation for the created for 1988 impacts, mitigation to offset 0.1 acre of impact to ephemeral hardbottom impacts may not be necessary.

4.17 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

There would be an unavoidable temporary increase in turbidity levels limited to the waters adjacent to the various construction activities. As previously noted, benthic organisms within the project area would be temporarily lost from project actions but quick colonization is anticipated. Nearshore hardbottom resources previously mitigated have become re-exposed due to shoreline recession south of the project area. These resources normally experience burial and exposure, and impacts to these are considered unavoidable given the location. These impacts would not have a significant impact on marine resources or the surrounding environment due to their small size and limited biological diversity, low organism densities and ephemeral nature.

4.18 LOCAL SHORT-TERM USES AND MAINTENANCE/ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Benthic and other bottom dwelling fauna and infauna would experience some short-term impacts, due to an inability to relocate from the area. However, those organisms which are able to relocate such as fish, crabs and some sand dwelling organisms would be able to move from the project site while construction activities are being conducted. Impacts to these organisms would be temporary and recolonization should occur relatively quickly following project activities.

4.19 ENVIRONMENTAL COMMITMENTS

The U.S. Army Corps of Engineers, and the local sponsor agree to avoid, minimize or mitigate for adverse effects during construction activities by including the following commitments in the contract specifications:

1. All terms and conditions set out in the Biological Opinion (B.O.) of the USFWS for those Federally endangered or threatened species identified in this Environmental Assessment and Statement of Findings prepared and presented in the DA permit would be implemented. Most importantly, the project would be constructed outside the primary sea turtle nesting season (May 1 through October 31). If construction activities were to occur outside this time frame but still within the potential sea turtle nesting season, i.e. March 1 to May 1 and November 1 through November 30, sea turtle monitoring and relocation would be performed in accordance with the B.O. Compaction monitoring and, if necessary, beach tilling would be performed pursuant to the B.O.

2. The standard manatee protection measures would be implemented for the duration of the project.

3. The standard migratory bird protection measures would also be implemented, if necessary.

4. All project activities would be in compliance with applicable water quality standards of the Water Quality Certification to be issued by the state of Florida.

5. The contractor would establish and maintain quality control for environmental protection of all items set forth in the project plans and specifications. The contractor would record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective action taken.

6. The local sponsor would notify the contractor in writing of any observed noncompliance with Federal, State, or local laws or regulations, permits and other elements of the contractor's Environmental Protection Plan. The contractor would, after receipt of such notice, inform the local sponsor of proposed corrective action and take such action as may be approved. If the contractor fails to comply promptly, the contracting officer would issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions would be granted or costs or damages allowed to the contractor for any such suspension.

7. The contractor would train his personnel in all phases of environmental protection. The training would include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities to insure adequate and continuous environmental pollution control. Quality control and supervisory personnel would be thoroughly trained in the proper use of monitoring devices and abatement equipment, and would be thoroughly knowledgeable of Federal, State, and local laws, regulations, and permits as listed in the Environmental Protection Plan submitted by the contractor.

4.20 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.20.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this draft Environmental Assessment (EA) has been prepared. The project will be in full compliance with the National Environmental Policy Act prior to construction.

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4.20.2 ENDANGERED SPECIES ACT OF 1973

Consultation with the NMFS and the USFWS is on-going (see Appendix C). This project will be in full compliance with the Act.

4.20.3 FISH AND WILDLIFE COORDINATION ACT OF 1958

A Coordination Act Report (CAR) is not required for this project. This project will be in full compliance with the Act.

4.20.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

(PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), and executive order 11593) Archival research, and consultation with the State Historic Preservation Officer (SHPO), is being conducted in accordance with the National Historic Preservation Act, as amended; the Archeological and Historic Preservation Act, as amended and Executive Order 11593. The required buffer would be maintained from any cultural resources identified in Borrow Site B and would be in compliance with these Acts.

4.20.5 WATER ACT OF 1972

Pursuant to Section 401 of the Clean Water Act, the proposed actions would be performed in full compliance with State water quality standards. The local sponsor has agreed to obtain the necessary permit from the Florida Department of Environmental Protection (FDEP). This action is pending with FDEP. In accordance with the Coastal Zone Management Act, the proposed action would also be reviewed by the State in order to determine if the project is consistent with the Coastal Zone Management Plan. This review is performed concurrently with the issuance of the water quality certification or permit.

4.20.6 CLEAN AIR ACT OF 1972

No air quality permits would be required for this project.

4.20.7 COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C will be included in this report as Appendix B. A State consistency determination is granted with issuance of the FDEP permit.

4.20.8 FARMLAND PROTECTION POLICY ACT OF 1981

No prime or unique farmland would be impacted by implementation of this project. This Act is not applicable.

4.20.9 WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic river reaches would be affected by project related activities. This act is not applicable.

4.20.10 MARINE MAMMAL PROTECTION ACT OF 1972

Incorporation of the safe guards used to protect threatened or endangered species during construction activities would also protect any marine mammals in the area; therefore, this project will be in compliance with the Act.

4.20.11 ESTUARY PROTECTION ACT OF 1968

Consultation with the NMFS and the USFWS is on-going (see Appendix C). This project will be in full compliance with the Act.

4.20.12 FEDERAL WATER PROJECT RECREATION ACT

The principles of the Federal Water Project Recreation Act, (Public Law 89-72) as amended, have been fulfilled by complying with the recreation cost sharing criteria as outlined in Section 2 (a), paragraph (2). Another area of compliance includes the public beach access requirement on which the renourishment project hinges (Section 1, (b)).

4.20.13 FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976

The project has been coordinated with the National Marine Fisheries Service (NMFS) and would fully comply with this Act.

4.20.14 SUBMERGED LANDS ACT OF 1953

The project would occur on submerged lands of the State of Florida. The project has been coordinated and will be in compliance with the act.

4.20.15 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

The project is a coastal barrier island but does not contain coastal barrier resources (as identified under these Acts) that would be adversely affected by the proposed action. These Acts would not be applicable.

4.20.16 RIVERS AND HARBORS ACT OF 1899

The proposed work would not obstruct navigable waters of the United States. The proposed action has been subject to the public notice and other evaluations normally conducted for activities subject to this Act. The project is in full compliance.

4.20.17 ANADROMOUS FISH CONSERVATION ACT

The project has been coordinated with the National Marine Fisheries Service and a final determination is pending. It anticipated the project would be in full compliance with the goals and objectives of this Act..

4.20.18 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

The Corps' standard migratory bird protection plan would be implemented, if required. The project shall be in full compliance with these Acts.

4.20.19 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

The term "dumping" as defined in the Act (33 U.S.C. 1402)(f)) does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (i.e. placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). Therefore, the Marine Protection, Research and Sanctuaries Act does not apply to this project. The disposal activities addressed in this EA have been evaluated under Section 404 of the Clean Water Act.

4.20.20 MAGNUSON-STEVEN'S FISHERY CONSERVATION AND MANAGEMENT ACT

This project has been coordinated with NMFS and a final determination is pending.

4.20.21 E.O. 11990, PROTECTION OF WETLANDS

No wetlands would be affected by project activities. This project is in compliance with the goals of this Executive Order.

4.20.22 E.O. 11988, FLOOD PLAIN MANAGEMENT

The project proposes no changes that would adversely affect area flooding. A benefit of the project would be realized to local roadways during storm events. Renourishment of existing shoreline berms would provide a form of protection from eroding and damaging flood waters during major storm events. The project will be in compliance with this Executive Order.

4.20.23 E.O. 12898, ENVIRONMENTAL JUSTICE.

The proposed action would not result in adverse human health or environmental effects. Any impacts of the action would not be disproportionate towards any minority. The activity does not (a) exclude persons from participation in, (b) deny persons the benefits of, or (c) subject persons to discrimination because of their race, color, or national origin. The activity would not impact "subsistence consumption of fish and wildlife."

4.20.24 E.O. 13089, CORAL REEF PROTECTION

The proposed action would not adversely impact any coral reefs.

4.20.25 E.O. 13112, INVASIVE SPECIES

Invasive species are present within the limits of the project.

5 LIST OF PREPARERS

5.1 PREPARERS

Preparer	Discipline	Role
Catherine L. Brooks	Biologist	Main Author
Terri Jordan	Biologist	NEPA Contributor
Paul Stodola	Biologist	NEPA Contributor
Charles Stevens	Engineer	Formulation
Grady Caulk	Archeologist	Cultural Resources
Matthew Miller	Engineer	HTRW Analysis

5.2 REVIEWERS.

Kenneth Dugger	Supervisory Biologist	Review
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6 PUBLIC INVOLVEMENT

6.1 SCOPING AND DRAFT EA

A public notice was issued for the proposed action on January 22, 2005. A scoping letter was also circulated February 16, 2007. If this environmental assessment (EA) concludes in a Finding of No Significant Impact (FONSI), the EA and FONSI would be made available to the public by Notice of Availability.

6.2 AGENCY COORDINATION

The proposed project has been coordinated under the PN and scoping letter with the following agencies: U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Florida State Clearinghouse, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, and Florida State Historic Preservation Officer (SHPO). The agencies comments and responses can be found in Appendix C.

6.3 LIST OF RECIPIENTS

The draft EA/FONSI would be circulated to Federal, State, and local agencies and other interested parties for review and comment. A complete mailing list can be found in Appendix C.

6.4 COMMENTS RECEIVED AND RESPONSE

Comments to the PN and draft environmental document will be included in the final EA/FONSI. Comments received to date are summarized below a copy of the agencies comments and provided responses included in Appendix C.

6.4.1 FEDERAL AGENCIES

6.4.1.1 U.S. Environmental Protection Agency (EPA).

The EPA commented by letter dated February 14, 2007, that the proposed project would impact 252.73 acres of Essential Fish Habitat (EFH) for federally managed fisheries and associated species as identified by the South Atlantic Fishery Management Council would be impacted by the project. Further commenting that no mitigation was proposed for the hardbottom structures or limestone outcrops found within the site. It was noted that the 1988 original beach nourishment mitigated for direct and indirect hardbottom impacts with the construction of six reef modules and a rock groin.

EPA concluded that impacts to the sand borrow areas and their associated macro-invertebrate communities may be more extensive and long-term. Documentation was requested on the location of existing offshore hardbottom habitats and maintenance of a 400-foot buffer between the borrow area and any adjacent hardbottoms. Detailed information was also requested on the proposed turbidity and sediment monitoring plan, along with mitigation monitoring reports from the 1988 original nourishment project.

6.4.1.2 U.S. National Marine Fisheries Service (NMFS)

By letter dated February 22, 2007, the NMFS concluded the project proposed a 30 percent increase to hardbottom than indicated. Additional information was requested on the borrow site, pipeline corridor, hardbottom monitoring, location of hardbottoms and impacts proposed to these resources.

6.4.2 OTHER INTERESTED PARTIES.

Mr. Robert Steinberg, a resident of Highland Beach commented by letter dated March 1, 2007, opposition to the proposed use of Borrow Area B. Finding that use of this area located 2,500 feet from the coast of Highland Beach would increase wave action (and erosional effects) upon an already unstable shoreline and would also impact sea turtle nesting.

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APPENDIX A - SECTION 404(B) EVALUATION

SECTION 404(b) EVALUATION

NORTH BOCA RATON SECOND RENOURISHMENT PROJECT BOCA RATON, PALM BEACH COUNTY, FLORIDA

I. Project Description

a. Beach Placement Location. The proposed project area is located 1.45 miles of shoreline located in southern Palm Beach County, on the east coast of Florida, approximately 40 miles north of Miami and 25 miles south of West Palm Beach. The site is further located between the State of Florida Department of Environmental Protection (FDEP) land survey monument markers T-205 and R-212 (plus the south 181 feet). The site is separated from the mainland by the Atlantic Intracoastal Waterway (AIWW) to the east and lies entirely within the limits of the City of Boca Raton, Palm Beach County, Florida. North Boca Raton is bounded to the north by Highland Beach and to the south by Deerfield Beach. The project site is not part of the coastal barrier resources system.

b. Borrow Site(s) Location. The proposed borrow area is located parallel to shore in the Atlantic Ocean, approximately 0.5 mile or 2,500 feet offshore between latitudes N748,500 and N751,500 (position from shore is approximately between FDEP survey monuments R-202 and R-205), in water depths range from 40 feet to 60 feet

c. General Description. The project involves the placement of approximately 918,200 cubic yards of beach quality material along 1.45 miles of shoreline in northern Boca Raton. Beach quality sand secured (from Borrow Area B located to the north) would be obtained by cutterhead dredge and pumped by floating and submerged hydraulic pipelines to the beach nourishment area (between monument locators T-205 to 181 feet south of R-212).

d. Authority and Purpose. Initial authorization was received on October 23, 1962 by Public Law 87-874, as part of the U.S. Army Corps of Engineers erosion control protection program for the Palm Beach County Atlantic shoreline. The project as described in House Document 164-871-1, called for nourishment of 2.7 miles of coastal shoreline from southern Highland Beach to northern Boca Raton. The original 2.7-mile authorization was later reduced to 1.45 miles due to environmental considerations (USACE, 1996).

e. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. Vibracore survey data obtained 1994 and 2004 by Coastal Planning and Engineering (CPE) found the borrow material to be uniformly gray in color, fine grained, composed of a mixture of quartz and carbonate with calcareous shell hash and coral fragments (2006). The composite mean grain size and sorting value of the borrow area sediments are 0.26 mm (1.97 phi) and

0.84 phi, respectively. The average silt to clay content of the borrow area material is 2.52 percent.. In comparison, beach sand samples (surface grabs) exhibit a mean grain size of 0.27 mm (1.88 phi) and a silt/clay content of 1.38% (CPE, 2006)

(2) Quantity of Material. Approximately 918,200 cubic.yards of beach quality sand would be obtained from the identified borrow source. 2007).

f. Description of the Proposed Renourishment Site

(1) Size and Location. The proposed renourishment area is located between monument markers R-202 to R-212 along approximately 1.45 miles of Atlantic shoreline. Beach quality fill would be placed from from T205 to 181 feet south of R-212..

(2) Type of Site. The dischare site includes an eroding, unconfined sand beach and the adjacent shallow nearshore zone.

(3) Type(s) of Habitat. Beach quality sand material would be placed over similar material consisting of carbonate and quartz at the intertidal, and shallow nearshore zones. Approximately 0.10 acre of scattered low relief ephemeral rock outcrop are present within the shallow nearshore zones. Only two small formations are currently exposed. The formations are of varying size and currently exposed. Mitigation for these resources are considered to have been included in mitigation created in 1988 with the first nourishment project. Six reef modules and one groin was created to mitigate impacts to ephemeral outcrop that would be buried by beach fill material. Mitigation is not proposed for the exposed outcrop within the range of the previously provided mitigation from R-204 to R-214.

(5) Timing and Duration of Discharge. The project is anticipated to take from 60 to 90 days to complete.

g. Description of Disposal Method. A cutterhead dredge with floating and submerged pipelines and hydraulic discharge capabilities would perform the necessary borrow site excavation and beach placement. Once the material is on the beach, conventional earth moving equipment would grade the fill to the proposed construction template (tilling would be performed as needed).

h. Access to Construction Site. The borrow area is located in open ocean and work would be done by an ocean going vessel (with cutterhead dredge). Equipment used for work on the beach would be delivered to the beach through City approved construction access points.

II. Factual Determinations (Section 230.11)

a. Physical Substrate Determinations (consider items in sections 230.11(a) and 230.20 Substrate)

(1) Substrate Elevation and Slope. The average berm width at equilibrium would be approximately 138.3 feet (50 foot design width plus an average 88.3 feet of advanced nourishment). The berm elevation would be a maximum elevation of +9 feet NGVD. The slope profile at equilibrium would be at 1V:15H from the seaward edge of the berm to profile intersection at 0-foot NGVD. The equilibrium profile would be 1V:45H until the profile intersects with the existing ocean bottom.

(2) Sediment Type. The borrow material to be dredged is beach compatible sand. Composite samples indicate the mean grain size are 0.26 mm (1.95 phi) and a silt/clay content of 2.52 percent (CPE, 2004).

(3) Dredged/Fill Material Movement. The fill material would be subject to erosion by waves and currents with the net littoral transport of material to the south.

(4) Physical Effects on Benthos. The proposed dredging action would have an adverse impact on any existing infauna. Impacts would be of a short duration. These organisms tend to quickly recolonize disturbed areas. No long-term impacts to the borrow area infaunal community is expected.

(6) Actions Taken to Minimize Impacts. If the final cultural resources determination concludes that resources of significant exist with the identified borrow area, a minimum construction buffer of 200 feet would be required. This buffer would provide some assurance that impacts to any existing resources would be avoid to the fullest extent practicable. Construction personnel would also be briefed of the necessity to protect the outside the footprint of impact. Monitoring personnel would also provide an added dimension of protection for existing resources.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water Column Effects. Some temporary impacts would result from the concentration of materials during dredging and discharge. Small particles suspended during dredging would have an adverse but temporary impact on water clarity at the point of dredging and in the nearshore zone at the discharge point. This increased turbidity would reduce the amount of light that is able to penetrate the light column. The project proposes no long-term impacts to salinity, water chemistry, color, odor, dissolved gas levels, nutrients or eutrophication.

(2) Current Patterns and Circulation. The net movement of water within the project area is from the north to the south. The project would have no effect on existing current patterns, current flow, velocity, stratification, or the hydrologic regime in the area.

(3) Normal Water Level Fluctuation and Salinity Gradients. Tides in the project area are semi-diurnal, with two high and two low tides occurring each day. The average tidal range along Boca Raton is 2.7 feet (Thompson, 1994). The mean tide level is 1.93 feet (NGVD) (Thompson, 1994). Salinity is that of oceanic waters. The project would not affect normal tide fluctuations or salinity gradients.

e. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. The project would have a temporary adverse impact on turbidity at the dredge site and in the nearshore zone near the discharge. Some small sediment particles, primarily of silt and clay sizes would become suspended in the water column during dredging and sand placement activities, thereby causing an increase in water turbidity. This increase in turbidity is not expected to have a significant impact on the surrounding environment since project related increases in turbidity would be of limited duration and areal extent. The amount of turbidity that would be produced would be low since the silt/clay content of borrow area sediments is low (approximately 2.52%). Any turbidity produced by the project is expected to quickly dissipate as a result of normal current and wave activity. Potential impacts related to increased turbidity would be further minimized by monitoring water quality at both the dredge and discharge sites. If turbidity levels exceed the state standard outside of state authorized mixing zones, all dredging activities shall be suspended until turbidity levels are within the allowable standards.

(2) Effects on the Chemical and Physical Properties of the Water Column.

(a) Light Penetration. Some decrease in light penetration may occur in the immediate vicinity of the dredge and discharge sites. The effect would be of limited duration and areal extent

(3) Effects on Biota. Substrate type and the presence of associated biota are influenced by sand movement. In areas where sand is constantly shifting, either moving on or offshore, or longshore, the presence of low- and high-relief substrate will vary. The loss of sand will expose previously covered rocky substrate creating reef habitat. Conversely, the influx of large amounts of sand can potentially cover these rocky areas. Project related impacts would be temporary.

(a) Primary Production, Photosynthesis. The project would have little to no adverse effects on existing primary productivity and photosynthesis within the borrow area and fill placement site. Both the borrow area and beach fill site are characterized as unvegetated sand areas. No algal or seagrass habitats occur in or immediately adjacent to the borrow area. Little to no vegetation existing within the proposed fill site. The vegetation present is located on the dune areas of the site and would not be affected by direct project related impacts.

The project is not expected to adversely impact the phytoplankton community in the project area. Increased turbidity at the dredge and discharge sites may reduce the amount of sunlight that reach phytoplankton near the borrow area or fill site, the effect would be of limited duration and areal extent. Phytoplankton that are lost as a result of the increased turbidity or as a result of dredge and fill activities would be quickly replaced by other phytoplankton.

(b) Suspension/Filter Feeders. Suspension and filter feeders within the dredge area and fill site would be physically removed or buried as a result of the project. These losses would be temporary since many suspension and filter feeding organisms have high reproductive rates and would quickly colonize the disturbed areas.

Project related increases in turbidity and/or sedimentation could also interfere with the normal feeding activities of suspension and filter feeder adjacent to the borrow area and or fill site. This interruption would be of a short duration and would affect a limited area. No permanent long-term impacts are anticipated.

(c) Sight Feeders. Project related increases in turbidity would not have a long-term impact on this value. Dredging and placement of fill material would cause some increases in turbidity, the resulting turbidity would be of short duration and would affect a limited area. Most sight feeders are highly motile and would be able to relocate to areas unaffected by project activities.

(4) Actions taken to Minimize Impacts All practical safeguards would be taken during construction to either avoid or minimize impacts and to preserve values associated with either the environment, aesthetics, recreation, and economics. Specific precautions that would be implemented in conjunction with the proposed project are discussed elsewhere in this 404(b) evaluation and in the Environmental Assessment for this project.

d. Contaminant Determinations. The material to be secured from the offsite borrow site is clean sand free of contaminants.

e. Aquatic Ecosystem and Organism Determinations. The grain size characteristics and composition exhibited by the proposed fill material are similar to those of the existing beach sediments. No sediment related impacts are expected. The proposed fill material meets the exclusion criteria, therefore, no additional chemical-biological interactive testing would be required.

(1) Effects on Plankton. No adverse long-term impacts to planktonic organisms are anticipated.

(2) Effects on Benthos. No adverse long-term impacts to non-motile or motile benthic invertebrates are anticipated.

(3) Effects on Nekton. No adverse long-term impacts to nektonic species are anticipated.

(4) Effects on Aquatic Food Web. No adverse long-term impact to any trophic group in the food web is anticipated.

(5) Effects on Special Aquatic Sites. No significant adverse impacts are expected at the patch or barrier hardbottom habitats adjacent to the borrow area. Although the proposed project would result in some localized increases in turbidity and sedimentation, impacts to the adjacent patch and barrier hardbottom habitats would be small due to the 300-foot distance that separates the proposed dredge site and the adjacent hardbottom formations. Precautionary measures would be implemented to protect the hardbottom communities from mechanical damage are outline in Section .0 of the Environmental Assessment.

Sand placement may bury exposed ephemeral nearshore rock outcrops. Mitigation offered with the first nourishment project included future ephemeral hardbottom that would become exposed within the project range from monument R-204 to R-214.

(e) Coral Reefs (refer to Section 230.44). There are no coral reef established within the immediate vicinity of the borrow area. Turbidity barrier and buffer would be constructed to provide a minimum buffer of 200 feet from know resources.

(6) Threatened and Endangered Species. There would be no significant adverse impact to any threatened or endangered species or to the critical habitat of any threatened or endangered species. Measures would be protect marine on shore and on land. Environmental commitments are discussed in details in Section 4 of this EA.

(7) Other Wildlife. No adverse impacts to small foraging mammals, reptiles, wading birds, or wildlife in general are anticipated.

(8) Actions to Minimize Impacts. All practicable safeguards would be taken during the construction to preserve and restore environmental, aesthetic, recreational and economic values in the project area. Specific precautions would be implemented in conjunction with the proposed project are discussed elsewhere in this 404(b) evaluation and in the environmental assessment.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. The construction of the renourishment project would not cause unacceptable changes outside of the State authorized zone, as specified in the State of Florida Water Quality Certification permit. No adverse impacts to water depth, current velocity and direction, variability, degree of turbulence, stratification, or ambient concentrations of constituents are anticipated as a result of the project.

(2) Determination of Compliance with Applicable Water Quality Standards. The waters of the project area are designated Class III or recreational. The project would not lower the existing standards outside of the established mixing zone.

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply. The project proposes no adverse impacts to municipal or private water supplies. Reervoirs for these resources are not located within or near the project site.

(b) Recreational and Commercial Fisheries. Fishing, or other recreational activities that are common to the borrow area would be suspended during construction activities; as well as, boating or fishing within the immediate project area. Fishing from areas of the beach is not allowed under city ordinances, to ensure the safety of swimmers. Recreational swimming in the project area would also be prohibited. Other than the listed activities, the project proposed no adverse impacts to recreational or commercial fisheries.

(c) Water Related Recreation. As a public safety measure, beach and water – related recreation in the immediate vicinity of the discharge pipe(s) would be prohibited during project construction. Prohibited activities would also extend to activities taking place near the dredge area.

(d) Aesthetics. The stabilization of the eroding project beach would have long-term positive effects on the aesthetics of the area. Construction activities however would have a temporary but localized through the increase and injections of heavy machinery sounds and increasing levels discharge to the air pollution. Increased water turbidity and the presence of construction equipment would also result in a temporary decrease in the visual appeal of the project area. Adverse impacts to the aesthetics of the project area would be of limited duration and would not have a long-term adverse impact on this value. Any detractor to this value would be eliminated at the conclusion of construction activities.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. Two city owned parks are located within the northern and southern portions of the project area. Another city owned beach park is located immediately south of the project area. The proposed project would not adversely affect these areas but would increase enjoyment of shoreline activities by restoring eroding place to full recreational use.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The proposed renourishment would have no adverse permanent cumulative or indirect impacts that would result in major impairment of water resources or interfere with the productivity or water quality of the existing aquatic ecosystem.

h. Determination of Secondary Effects on the Aquatic Ecosystem. The proposes no adverse secondary impacts to the existing aquatic environment.

III. Findings of Compliance or Non-Compliance With the Restrictions on Discharge.

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation. No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem. No practicable alternative exists which meets the project objectives and does not involve the discharge of fill into waters of the United States. No practicable cost-effective renourishment alternative exists that would have less impact on the surrounding environment. The use of upland and or other sand sources would most likely result in environmental impacts that are equal to or greater than those associated with the use of the proposed borrow area. Cost related to the use of an alternative sand source would be significantly higher than the proposed project, due to higher transportation costs and or higher bulk purchase prices. The action alternative would allow for the continued erosion of the project beach and would not provide the benefits needed for storm damage protection.

c. Compliance with Applicable State Water Quality Standards. After consideration of disposal site dilution and dispersion, the discharge of fill materials would not cause or contribute to violations of any applicable state water quality standards for Class III water outside of the state authorized mixing zone. The discharge operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act. After consideration of disposal site dilution and dispersion, the discharge of fill materials would not cause or contribute to violations of any applicable state water quality standards for Class III water outside of the state authorized mixing zoneThe discharge operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act of 1973. The dredging of and disposal of dredged materials for beach renourishment would not jeopardize the continued existence of any species listed as threatened or endangered or result in the destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972. The dredging of and disposal of dredged materials for beach renourishment would not jeopardize the continued existence of any species listed as threatened or endangered or result in the destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant Adverse Effects on Human Health and Welfare. The dredging and placement of fill material would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fishes, shellfishes, wildlife, or special aquatic sites. The life stages of aquatic and other wildlife would not be adversely affected. No adverse effects would occur to aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem. Appropriate steps have been taken to minimize any adverse environmental impact related to the proposed action (see Section 6.0 Environmental Assessment). The proposed borrow area has low silt content, the amount of turbidity that would be generated from fill activities would be low. Turbidity values at both the dredge and discharge sites would be monitored on a regular basis throughout the project. If turbidity levels in the pre-determined mixing zone exceed the State water quality standard of 29 NTU's above background, the contractor would be required to cease work until turbidity levels meet state standards.

i. On the Basis of the Guidelines. the Proposed dredge and disposal sites would comply with the requirement of the Section 404(b)(1) and Section 103 guidelines.

APPENDIX B - COASTAL ZONE MANAGEMENT CONSISTENCY

**FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES**

**NORTH BOCA RATON
SECOND RENOURISHMENT PROJECT
BOCA RATON, PALM BEACH COUNTY, FLORIDA**

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: Beach renourishment is the basic project purpose with intent to buffer and control eroding shoreline. The project has given full consideration to the direct and indirect impacts on natural coastal processes, activities, vegetation, and adjacent property. The proposed plans and information has been submitted to the state in compliance with this chapter.

2. Chapters 163(part II), 186, and 187, County, Municipal, State and Regional Planning. These chapters establish the Local Comprehensive Plans, the Strategic Regional Policy Plans, and the State Comprehensive Plan (SCP). The SCP sets goals that articulate a strategic vision of the State's future. It's purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Response: The proposed project has been coordinated with various Federal, State and local agencies during the planning and permitting processes. The project meets the primary goal of the State Comprehensive Plan for beaches through preservation and protection of existing shores, shorefront development and infrastructure.

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project involves the placing of beach compatible material onto an eroding beach as a protective means for residents, development and infrastructure located along the Atlantic shoreline within Palm Beach County. Therefore, the project would be consistent with the efforts of the Division of Emergency Management.

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: The proposed beach nourishment would protect an eroding public beach and dune system, maintain access to recreational beach and protect potential sea turtle nesting habitat. No seagrass beds are located within the area proposed to receive renourishment material. The proposed project would comply with the intent of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: Since the affected property already is in public ownership, this chapter does not apply.

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: The proposed project area does not contain any state parks or aquatic preserves nor are there any within the immediate vicinity of the project that would be affected. The project is consistent with this chapter.

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: This project has been coordinated with the State Historic Preservation Officer (SHPO). Historic property investigations were conducted in the project area. An archival and literature search, in addition to, a magnetometer survey of the proposed borrow area were conducted. The borrow site would be limited to areas appropriately investigated for possible cultural resources. The appropriate buffer zone would be established around possible eligible cultural resources and would not be dredged.

8. Chapter 288, Economic Development and Tourism. This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: The proposed beach nourishment would provide maintain, nourish, and protect beaches use for recreational pursuits, in addition to, protecting recreational facilities along the receiving beach. This would be compatible with tourism for this area and therefore, is consistent with the goals of this chapter.

9. Chapters 334 and 339, Transportation. This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Response: No public transportation systems would be impacted by this project.

10. Chapter 370, Saltwater Living Resources. This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

Response: The proposed beach fill may represent a temporary short-term impact to infaunal invertebrates by burying these organisms. However, these organisms are highly adapted to the periodic burial by sand in the intertidal zone. These organisms are highly fecund and are expected to return to pre-construction levels within 6 months to one year after construction. Nourishment activities would not be performed during the main part of the sea turtle nesting season. It is not expected that sea turtles would be significantly impacted by this project. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

11. Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project will have no effect on freshwater aquatic life or wild animal life.

12. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: This project does not involve water resources as described by this chapter.

13. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

14. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This project does not involve the exploration, drilling or production of gas, oil or petroleum product, this chapter does not apply.

15. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development. This chapter also deals with the Area of Critical State Concern program and the Coastal Infrastructure Policy.

Response: The proposed renourishment project will not have any regional impact on resources in the area. Therefore, the project is consistent with the goals of this chapter.

16. Chapters 381 (selected subsections on on-site sewage treatment and disposal systems) and 388 (Mosquito/Arthropod Control). Chapter 388 provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: The project will not further the propagation of mosquitoes or other pest arthropods.

17. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Response: A Final Environmental Assessment addressing project impacts will be prepared and would be reviewed by the appropriate resource agencies including the Florida Department of Environmental Protection. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Water Quality Certification will be obtained by the sponsor from the State. This certification would be achieved prior to the start of construction. The project complies with the intent of this chapter.

18. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: The proposed project is not located near or on agricultural lands; therefore, this chapter does not apply.

APPENDIX C - PERTINENT CORRESPONDENCE

RECEIVED
MAR 03 2007
JACKSONVILLE DISTRICT
USACE

Robert Steinberg
4401 S. Ocean Blvd
Highland Beach, FL 33487

March 1, 2007

Department of the Army
Jacksonville District Corps of Engineers
4400 PGA Boulevard, Suite 500
Palm Beach Gardens, FL 33410

Attn: Palm Beach Gardens Regulatory Office

Re: Permit Application SAJ-1986-479

Dear Sirs,

Upon reading the permit application submitted by the City of Boca Raton I was shocked to see what was being contemplated. I believe the plan presents grave implications for the residents of Highland Beach.

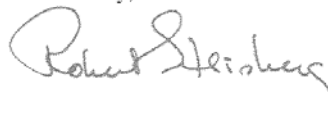
There is no question that the beachfront of Boca Raton is in need of repair after being devastated by recent storms, but so does the beachfront of neighboring Highland Beach. These beaches have been equally degraded as a vast quantity of sand has been eroded and either washed or blown offshore. Now, this application by the City of Boca Raton would "borrow" this sand to refurbish their beach.

There can be no argument that by allowing the use of Area B the seafloor elevations and its slope will be changed only 2500 feet from the coast of Highland Beach. These changes will no doubt increase wave action and power as they approach landfall. Additional swirling action will further impact an already unstable situation. Highland Beach waterfront, long a vibrant habitat for sea turtles, is nearing a critical point where any further degradation will make natural habitat impossible. There are likely to be numerous other negative impacts that either I as layman or others as experts will bring to your attention in the near future.

The application calls for 2 Borrow Areas. I do not oppose using Area A as any area negatively impacted is likely to be the same that are benefiting. However, I am outraged by the audacity to use Area B where the negative impact falls completely on Highland Beach which will receive none of the benefit. It is insulting for Highland Beach to be treated in this manner by neighboring town, Boca Raton.

Thank you for the opportunity to submit my comments and for your consideration to deny the use of Area B.

Sincerely,



cc: Town of Highland Beach
Ocean Place Estates

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